FOUNDED IN 1856

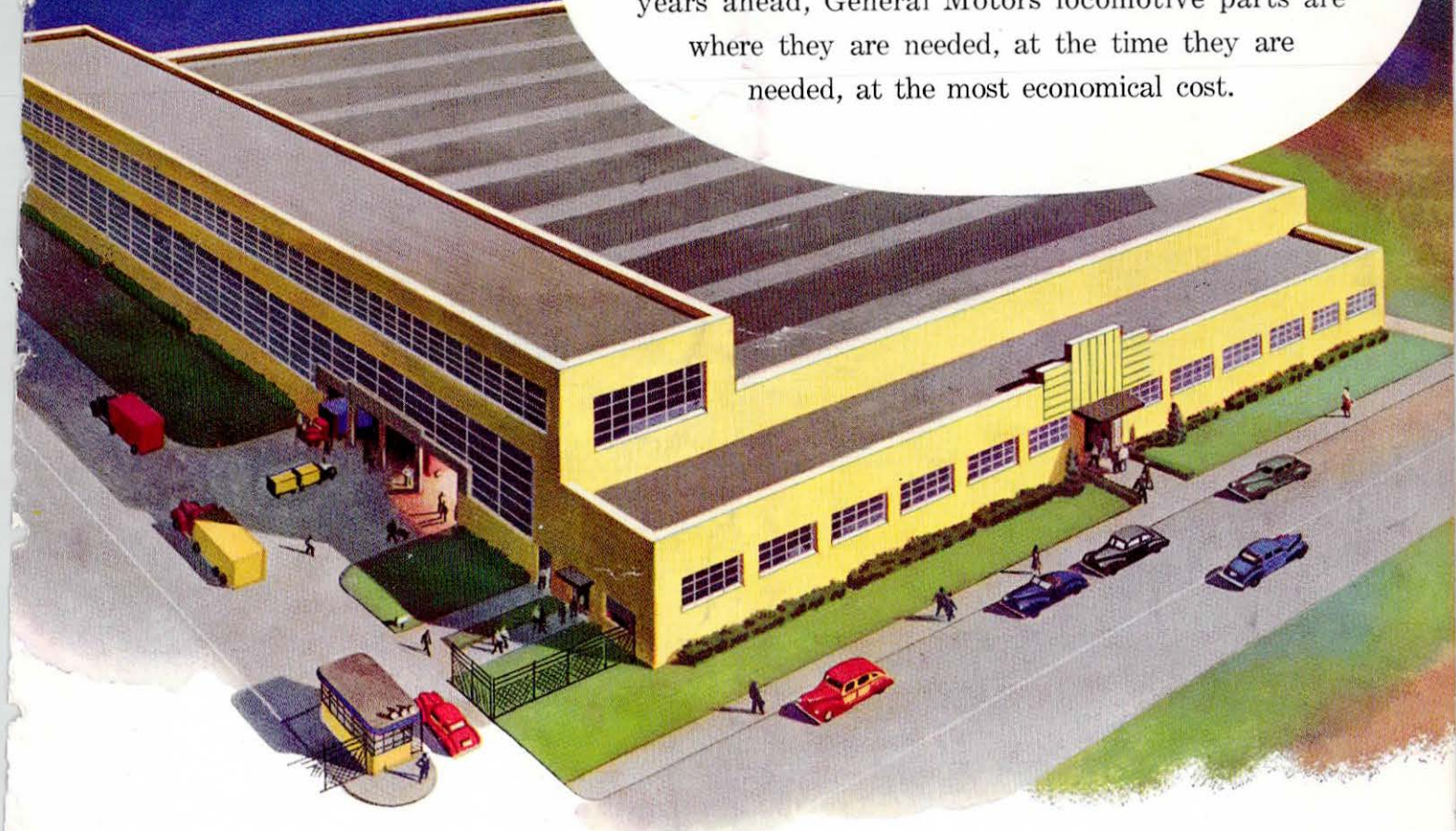
RAILWAY AGE

McCARTNEY LIBRARY
GENEVA COLLEGE

FEBRUARY 12, 1949

Parts Facilities Doubled!

THE new locomotive parts center, now in full operation at La Grange, does more than double Electro-Motive parts capacity. It provides unmatched facilities for storage, handling, packaging and shipping to assure that now, and for years ahead, General Motors locomotive parts are where they are needed, at the time they are needed, at the most economical cost.



ELECTRO-MOTIVE

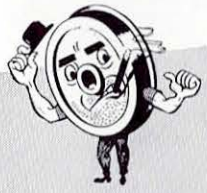
DIVISION OF GENERAL MOTORS • LA GRANGE, ILL.

GENERAL MOTORS LOCOMOTIVES

Home of the Diesel Locomotive

Chilled Car Wheels REDUCE

COSTS BECAUSE....



THERE IS AN A M C C W MEMBER PLANT IN

Amherst, N. S.
Atlanta, Ga.
Berwick, Pa.
Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill. (2)
Cincinnati, Ohio
Council Bluffs, Iowa
Denver, Colo.
Detroit, Mich.
Hammond, Ind.
Houston, Texas
Huntington, W. Va.
Kansas City, Mo.
Los Angeles, Calif.
Marshall, Texas
Montreal, P. Q.
Pittsburgh, Pa.
Portsmouth, Va.
Rochester, N. Y.
St. Louis, Mo. (2)
St. Paul, Minn.
Salt Lake City, Utah
Sayre, Pa.
Tacoma, Wash.
Toledo, Ohio

• • • the 29 AMCCW foundries where they are made are so widely spread from coast to coast that wheels are delivered to many users over shorter distances. In fact, most American railroads have one or more of these plants either on their line or very close to it.

Whether it is Montreal or Houston, Boston or Tacoma, at each point in the list of foundry locations, you will find (1) a reliable source of chilled car wheels and (2) a dependable outlet for wheel scrap. Furthermore, AMCCW Membership is the mark of a company well in the forefront of every sound new development in improved wheel service.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS

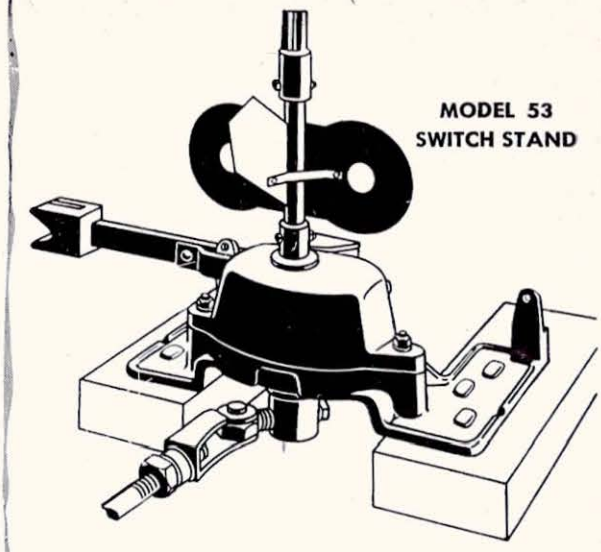
445 NORTH SACRAMENTO BOULEVARD, CHICAGO 12, ILL.

American Car & Foundry Co. • Canadian Car & Foundry Co. • Griffin Wheel Co.
Marshall Car Wheel & Foundry Co. • New York Car Wheel Co. • Pullman-Standard Car Mfg. Co.
Southern Wheel (American Brake Shoe Co.)

7197

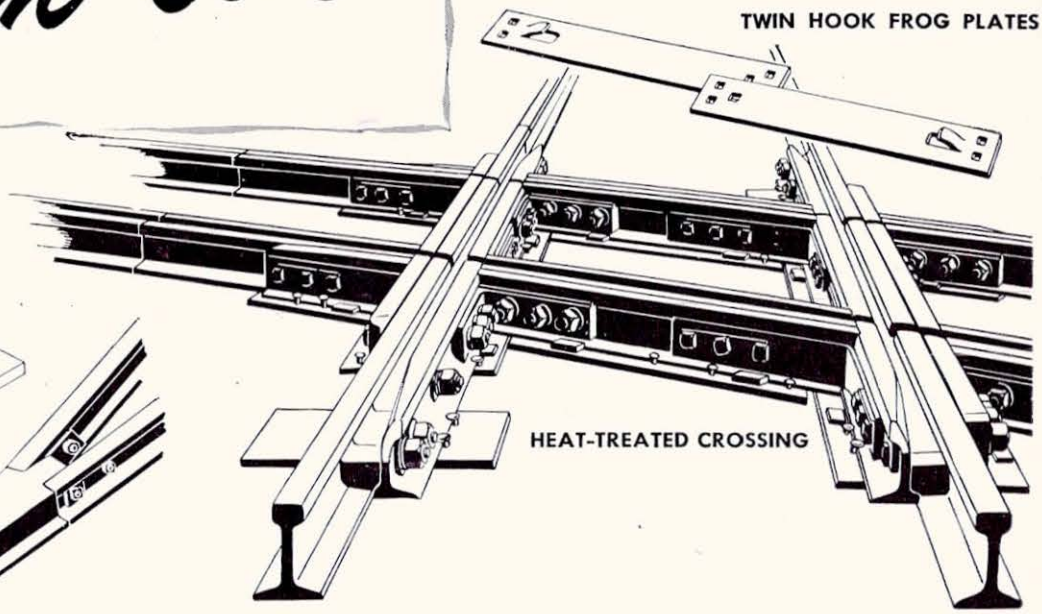
Published weekly by Simmons-Boardman Publishing Corporation, Orange, Conn. Executive Offices, 30 Church Street, New York 7, N. Y. Entered as second class matter at Orange, Conn., under the act of March 3, 1879. Subscription price $6.00 for one year, U. S. and Canada. Single copies, 50 cents each. Vol. 126, No. 7.

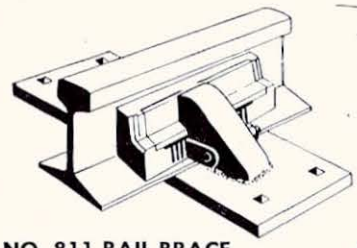
You Can Bank On Them All



MODEL 53
SWITCH STAND

TWIN HOOK FROG PLATES

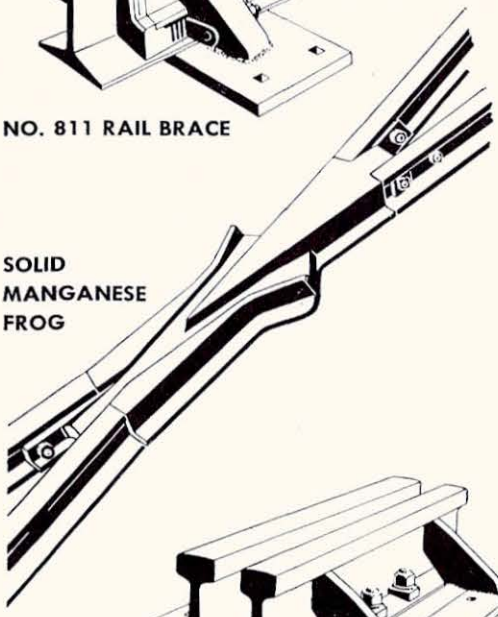


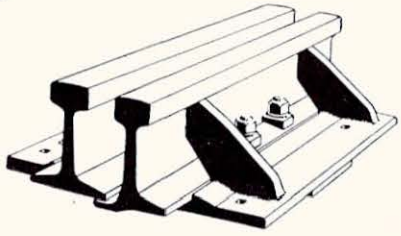


NO. 811 RAIL BRACE

HEAT-TREATED CROSSING

SOLID
MANGANESE
FROG





IMPROVED HOOK-FLANGE
GUARD RAIL

Every Bethlehem track product can be relied upon to do a competent job. This dependability, amply proved over a long span of years, is the strongest selling-point we could possibly advance.

Bethlehem manufactures virtually every item of track and track accessories. Big special layouts? We can build them for you. Switch stands, braces, frog plates, guard rails? They're Bethlehem specialties. Spikes, bolts, nuts? Yes, these too — and many other items vital to the modern track system. You can bank on them all.

Whether you need a keg of bolts or a complete track layout for yard, dock, or terminal, let Bethlehem take care of it. Your confidence will not be misplaced.

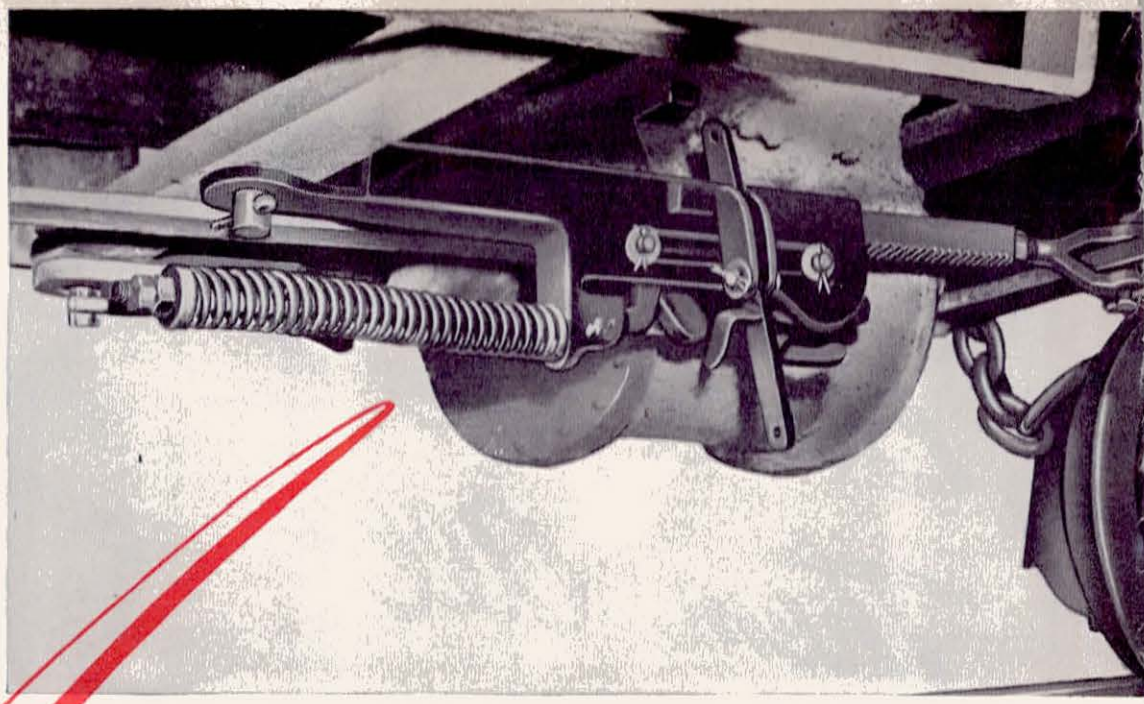
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

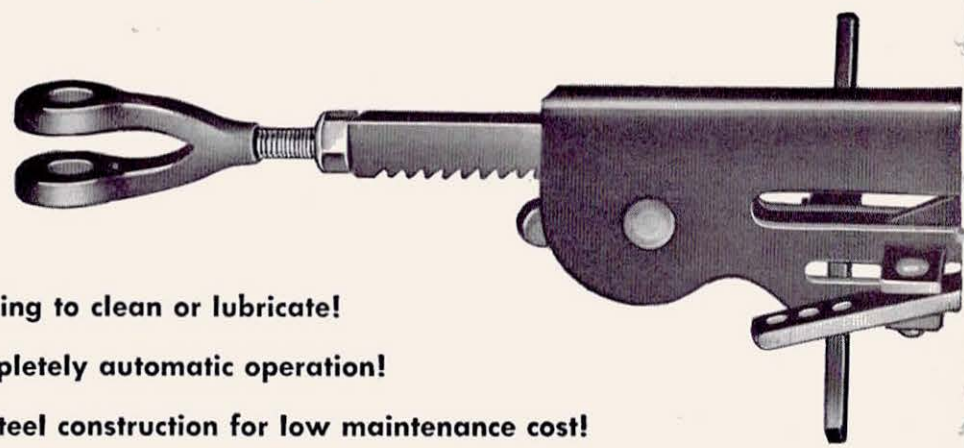
★ BETHLEHEM STEEL ★

Some of the many Bethlehem Track Products:

BOLTS AND NUTS . . SPIKES . . CROSSINGS . . FROG PLATES
FROGS . . GAGE RODS . . GUARD RAILS . . JOINT BARS . . RAIL BRACES
RAILS . . SWITCHES . . SWITCH HEATERS . . SWITCH STANDS . . TIE PLATES



Announcing the AUTOMATIC



- Nothing to clean or lubricate!
- Completely automatic operation!
- All steel construction for low maintenance cost!
- Light weight... only approximately 28 lbs. added to weight of car!
- No manual adjustments of piston travel necessary after initial application!
- Quick, simple installation... adjuster merely replaces cylinder lever connecting rod. No brackets!

OTHER SPRING PACKING PRODUCTS

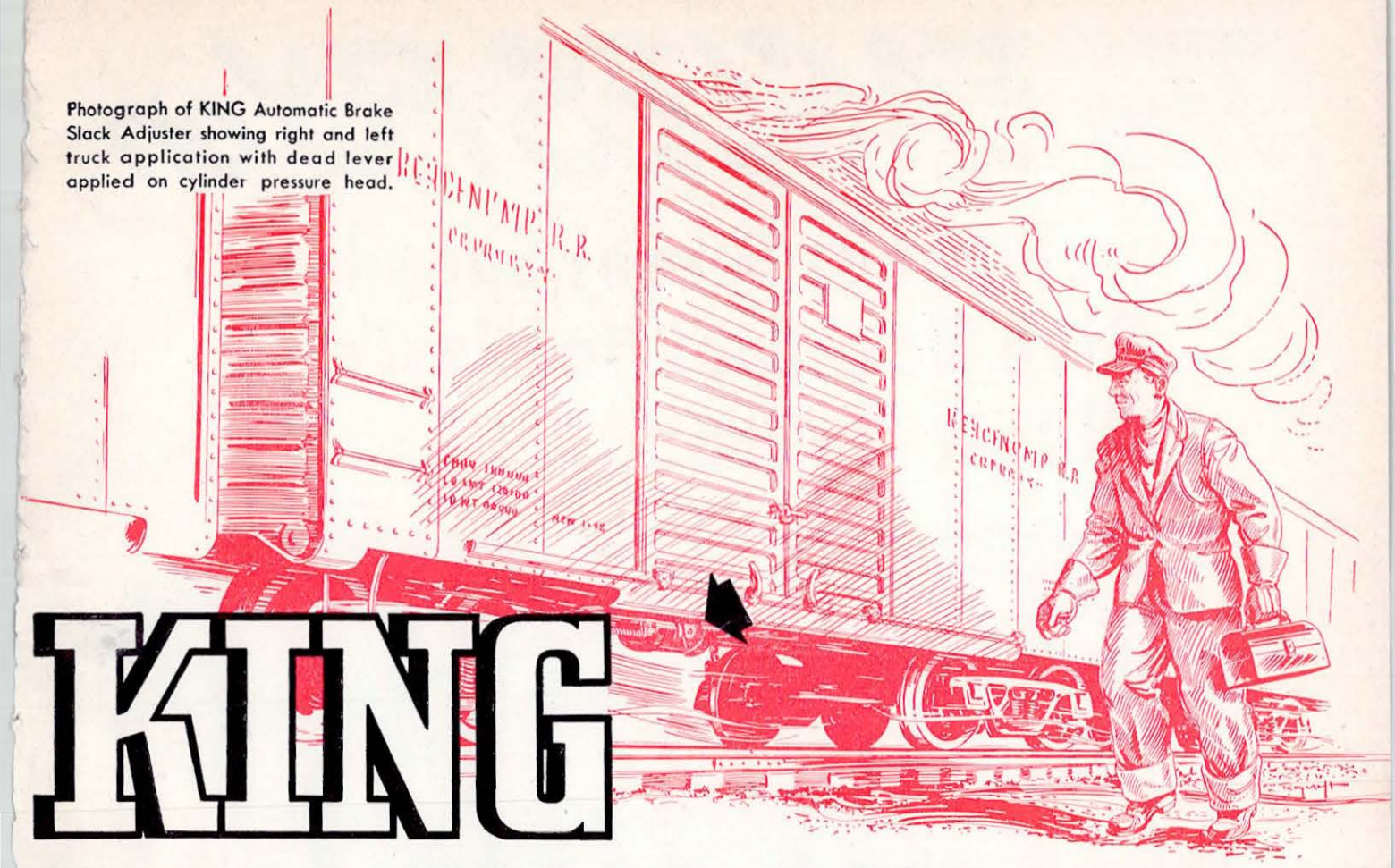
Hold-Rite Packing Retainer

Spring Packing

Plastic Armor

Everseal Metallic Packing

Photograph of KING Automatic Brake Slack Adjuster showing right and left truck application with dead lever applied on cylinder pressure head.

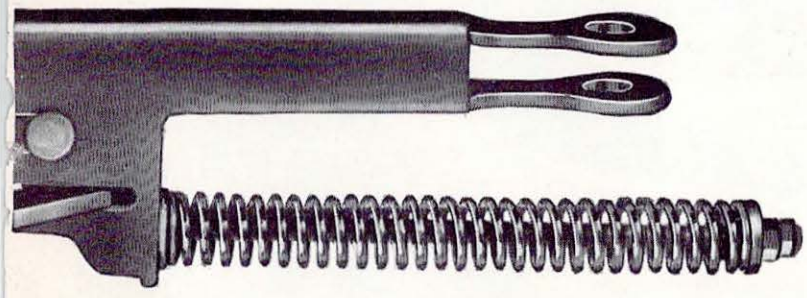


KING

BRAKE SLACK ADJUSTER

(Pat. Applied For)

For Better Braking Power on Heavily Loaded Cars



Alert railroad men will welcome the new brake safety factor, the simplicity of construction, the foolproof operation and the low installation and maintenance costs built into this Spring Packing Corporation product.

Tested and proven, the KING Automatic Brake Slack Adjuster keeps brake equipment operating under all circumstances at maximum efficiency in accordance with the original design of the brake manufacturer . . . an especially desirable feature on heavily loaded cars. Also, the adjuster eliminates the hazard of men getting under the car to release slack in the brake rigging to renew brake shoes, or to adjust brakes.

The KING Automatic Brake Slack Adjuster is designed for all box, flat, hopper and gondola freight cars, for cars equipped with vacuum brakes, and for cars of unusual design. It is inexpensive! Write today for complete information.

For 29 Years *the Standard*

SPRING PACKING CORPORATION

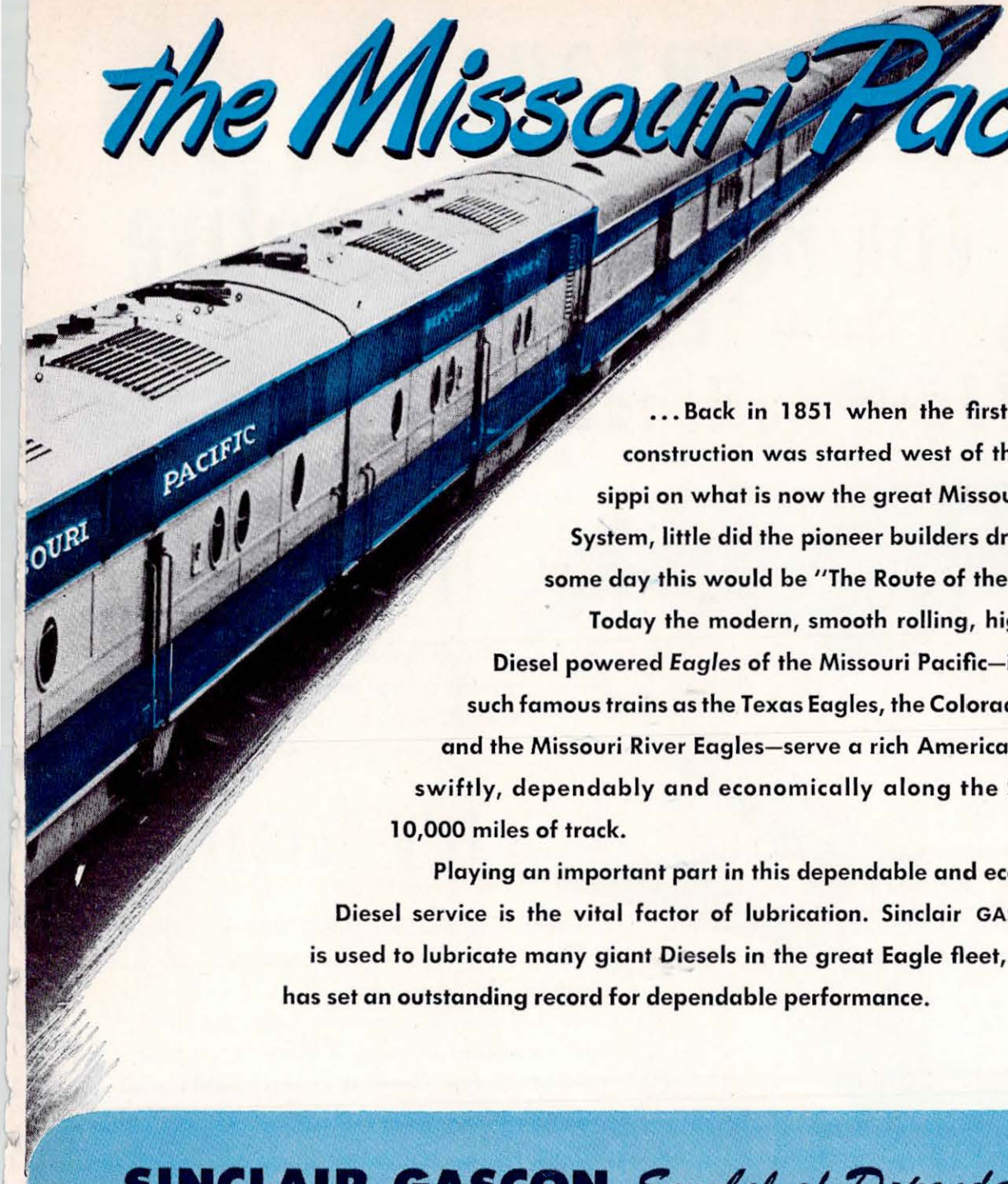
122 SOUTH MICHIGAN AVENUE, CHICAGO 3, ILLINOIS

The EAGLES FLY on

...Famous Diesel Speedsters Give New Look to West's Oldest Railroad...

MISSOURI PACIFIC LINES

the Missouri Pacific



...Back in 1851 when the first railroad construction was started west of the Mississippi on what is now the great Missouri Pacific System, little did the pioneer builders dream that some day this would be "The Route of the *Eagles*." Today the modern, smooth rolling, high speed Diesel powered *Eagles* of the Missouri Pacific—including such famous trains as the Texas Eagles, the Colorado Eagles and the Missouri River Eagles—serve a rich American empire swiftly, dependably and economically along the System's 10,000 miles of track.

Playing an important part in this dependable and economical Diesel service is the vital factor of lubrication. Sinclair GASCON OIL is used to lubricate many giant Diesels in the great Eagle fleet, where it has set an outstanding record for dependable performance.

SINCLAIR GASCON *Symbol of Dependability*

Sinclair GASCON DIESEL lubricating oils have achieved the stamp of approval from more than 50 U.S. railroads. Their service record, in the locomotives pulling heavy freights, as well as many of the celebrated streamlined trains of today, is outstanding.

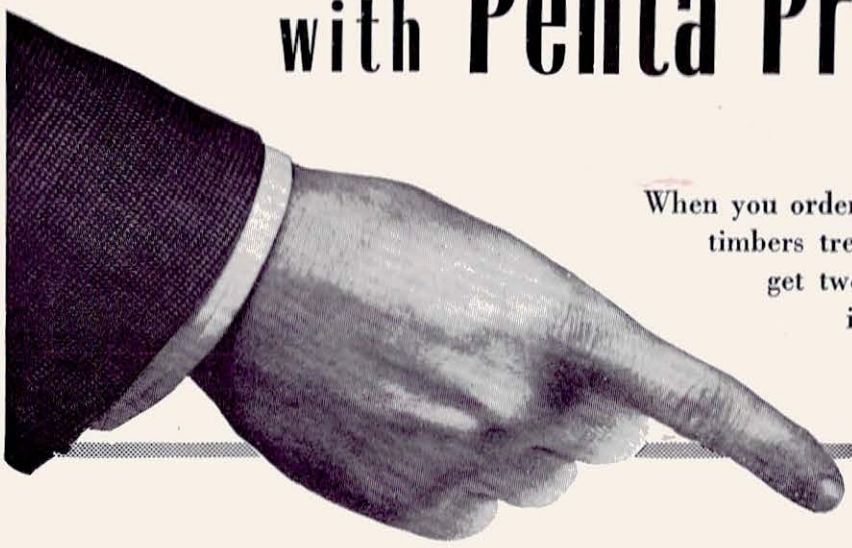
Inherent in all GASCON OILS is their solvent action, which promotes clean engine operation, and their wear prevention qualities that hold down expensive replacement and maintenance costs.

SINCLAIR

RAILROAD LUBRICANTS

SINCLAIR REFINING COMPANY, RAILWAY SALES · NEW YORK · CHICAGO · ST. LOUIS · HOUSTON

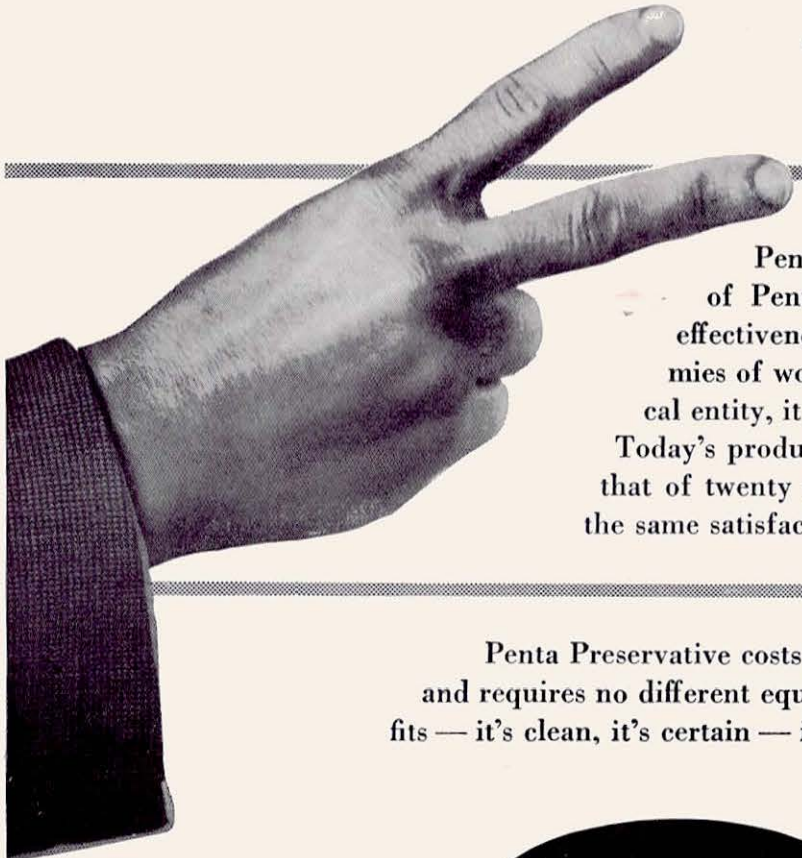
TWO Advantages with Penta Preservative



When you order your poles, cross arms and other timbers treated with Penta Preservative you get two qualities that should be of first importance to you.

It's Clean

Wood treated with Penta Preservative is not unpleasant to handle or work with. It doesn't soil hands or clothes. It has no appreciable odor.



It's Certain

Pentachlorophenol, the active ingredient of Penta Preservative, has demonstrated its effectiveness against rot, termites, and other enemies of wood. And because it is a definite chemical entity, it remains unchanged through the years. Today's production has identical characteristics with that of twenty years ago. You can be sure of getting the same satisfactory results shown by old applications.

Penta Preservative costs no more than other treating materials, and requires no different equipment or techniques. The extra benefits — it's clean, it's certain — involve neither expense nor trouble.

CLEAN • IT'S CERTAIN • IT'S CLEAN • IT'S CERTA **CHAPMAN** IT'S CLEAN • IT'S CERTAIN • IT'S CLEAN • IT'S

CHAPMAN CHEMICAL COMPANY ★ 761 Dermon Building, Memphis 3, Tennessee

BROWNHOIST'S 1949 DIESEL ELECTRIC LOCOMOTIVE-CRANE MARCHES IN THE PARADE OF BROWNHOIST *FIRSTS!*

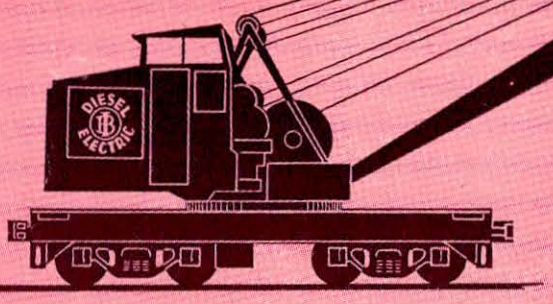
PIONEERS IN DEVELOPMENT OF DIESEL POWERED CRANE IN 1928

THE FIRST GAS-ELECTRIC LOCOMOTIVE-CRANE 1929

FIRST ELECTRIC LOCOMOTIVE-CRANE 1901

MORE THAN FIVE HUNDRED DIESEL POWERED CRANES IN SERVICE

FOR 75 YEARS BUILDERS OF MORE THAN 20,000 CRANES (15,000 STILL IN SERVICE)



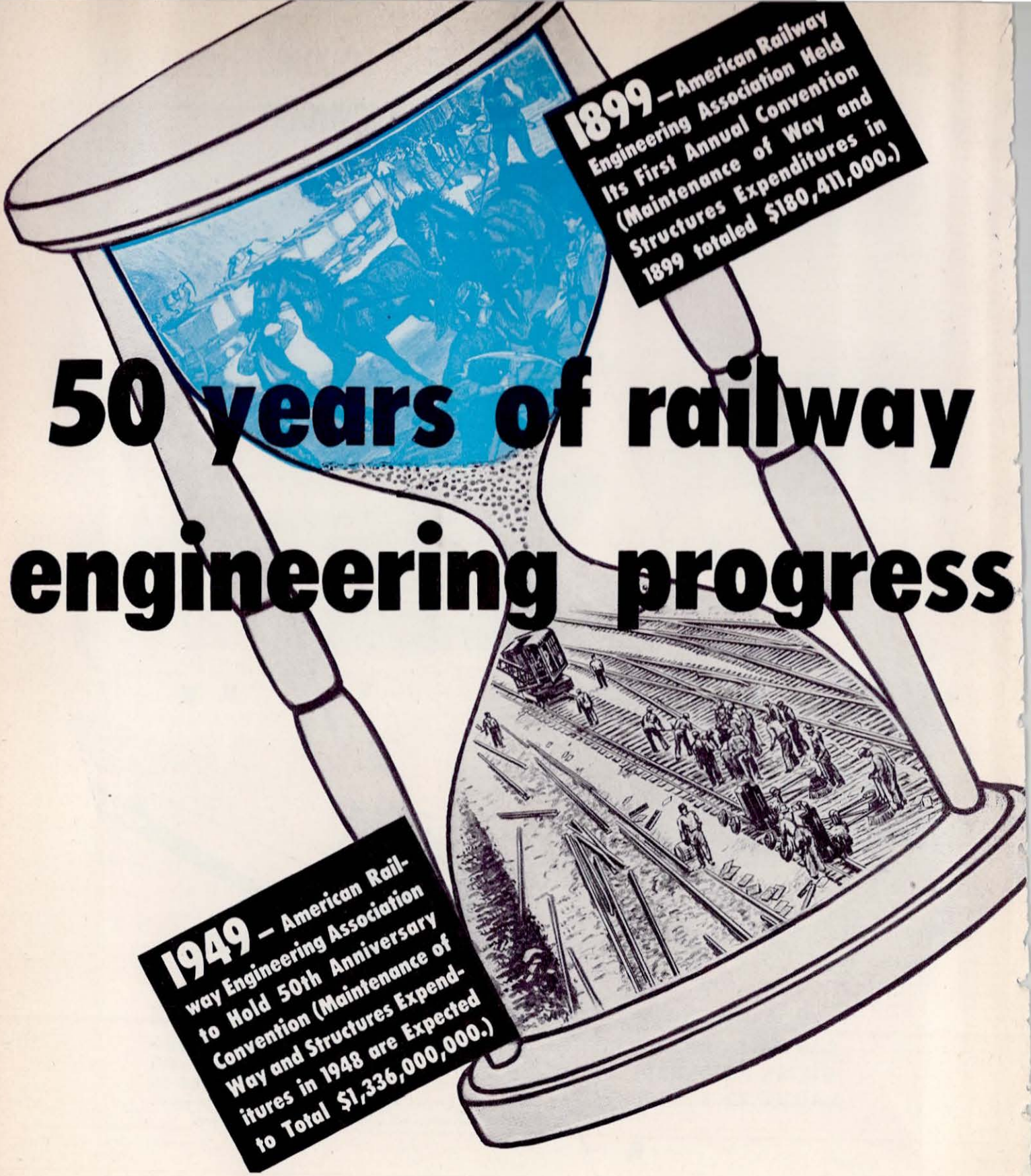
THE WORLD'S LARGEST CAPACITY DIESEL POWERED RAILROAD CRANE

NEW BROWNHOIST DIESEL ELECTRIC LOCOMOTIVE-CRANE

Continuing their firsts, Brownhoist *alone* offers a complete line of Diesel Electric Locomotive-Cranes. Standard models available for every capacity requirement include the D.E.-30, D.E.-50, D.E.-60; special larger capacity sizes built to order. Write for complete information and literature.

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN

DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago. **AGENCIES:** Detroit, Birmingham, Houston, Los Angeles, Portland, San Francisco, Seattle, Spokane. Canadian Brownhoist Ltd., Montreal, Quebec.


1899 — American Railway Engineering Association Held Its First Annual Convention (Maintenance of Way and Structures Expenditures in 1899 totaled $180,411,000.)
1949 — American Railway Engineering Association to Hold 50th Anniversary Convention (Maintenance of Way and Structures Expenditures in 1948 are Expected to Total $1,336,000,000.)

50 years of railway engineering progress

Yes, This Year, It's 50 Candles for the A. R. E. A.!

Railway Age Will Report the "Golden Anniversary" Convention

As It Has Every One Since the First One in 1899

ON MARCH 30, 1899, a few dozen railway engineering officers met in Buffalo, New York, for the first regular meeting of what later became known as the American Railway Engineering Association. Under the leadership of H. P. Robinson, then editor of *Railway Age*, a preliminary "pilot" meeting had been held in Chicago the previous October which had fixed on a name and appointed a committee to prepare a constitution for the new organization.

On March 15, 16, 17, 1949, nearly 2,000 members and guests are expected to converge on Chicago for the 50th Anniversary Meeting of the A.R.E.A. at the Palmer House. An Exhibit by the National Railway Appliances Association on March 14, 15, 16, and 17, at the Coliseum, will echo the golden Anniversary theme, "A Past of Achievement—A Future of Opportunity".

And Railway Age will cover the activities as it has at every convention since the first one 50 years ago. The March 12 issue will highlight the Convention through special features on the history of the Association, program of the meetings, preview of the exhibit and new devices. The March 19 issue will report the activities of the Golden Anniversary Convention . . . including high-spots of the stimulating addresses and committee reports. It will provide this concise record promptly after the close of the Convention.

Manufacturers whose products are used by railway engineering and maintenance officers have an ideal opportunity to join in the Golden Anniversary celebration by featuring a message in the March 12 and March 19 issues.

March 12 and March 19 Issues

A.R.E.A. 50th ANNIVERSARY CONVENTION NUMBERS of RAILWAY AGE

Remember, ONE BAD WHEEL
can stop an entire train

● When *one* wheel of a freight "goes bad" the entire train slows down—or stops. Schedules are interrupted. Perishable goods are endangered. The reputation of the line suffers; some shippers may even switch to other means of transportation.

Delays caused by wheel failures have decreased wherever U·S·S One-Wear Wrought Steel Wheels have been adopted. Cars with these long-lasting wheels stay off the repair track, remain in service longer without wheel change.

U·S·S One-Wear Wrought Steel Wheels are light. They save approximately 1300 pounds per car. Load capacity is increased, maintenance costs reduced. They have high resistance to wear or fatigue failure under heavy loads. And their ability to endure heavy brake action and impact at high speeds gives them a high safety factor.

They give longer mileage—test mileage well over 300,000 miles have been recorded for many U·S·S One-Wear Wrought Steel Wheels. You can conservatively anticipate 200,000 miles average under 50/55 ton service, and 160,000 miles average under 70-ton service. On a basis of cost per thousand miles, no other freight car wheel costs so little to run.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH AND CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S ONE-WEAR WROUGHT STEEL WHEELS

USS

UNITED STATES STEEL

How to make your rolling stock declare extra dividends

—DIVIDENDS that the appearance of your freight equipment can win for you in the public's eye.

—dividends that go beyond your trackage to parts of the country where freight cars are often the chief means of displaying your company name . . . and of reflecting the soundness and progressiveness of your organization.

Well aware of the fact that *appearance* does count, many railroad men today are counting on Du Pont DULUX Railroad Finishes on their freight equipment . . . for lasting service and outstanding good looks. And DULUX lives up to this confidence. DULUX retains its high initial gloss despite years of smoke, fumes, cinders, hard knocks, and weathering. DULUX comes in a wide range of colors for instant identification. DULUX means long-term beauty with less frequent need for maintenance painting. Finally . . . and more important . . . DULUX wins the approval of millions of interested eyes! E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.

85% **of America's leading railways* use DUCO lacquer or DULUX enamel on passenger train equipment.**

. . . conclusive proof that the nation's railroads depend on the exceptional qualities of Du Pont DUCO and DULUX Railroad Finishes: outstanding durability and sparkling beauty with a minimum of maintenance!

**Includes Class 1 lines operating 100 or more passenger train cars.*

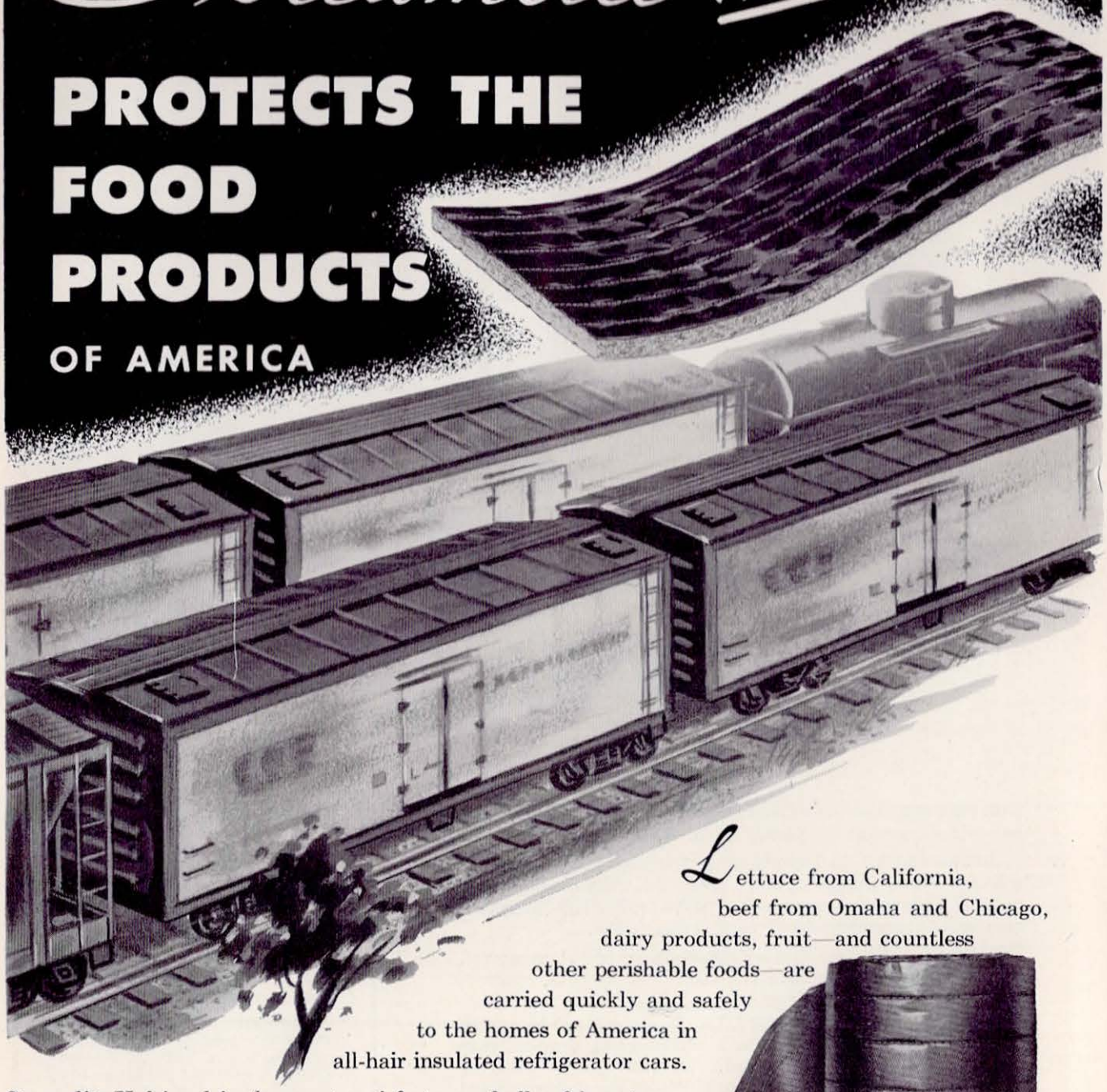
DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DUCO-DULUX
REG. U. S. PAT. OFF. REG. U. S. PAT. OFF.
Railroad Finishes

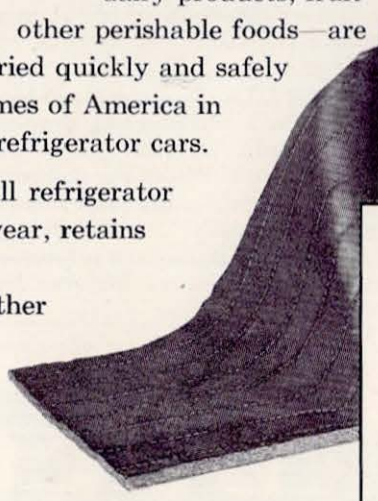
Streamlite Hairinsul

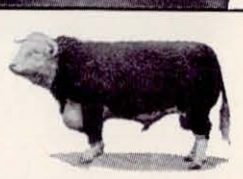
PROTECTS THE FOOD PRODUCTS OF AMERICA



Lettuce from California, beef from Omaha and Chicago, dairy products, fruit—and countless other perishable foods—are carried quickly and safely to the homes of America in all-hair insulated refrigerator cars.

Streamlite Hairinsul is the most satisfactory of all refrigerator car insulations. The choice of shippers year after year, retains its high insulation efficiency throughout the life of the car even when exposed to moisture and other insulation hazards.





HAIR IS NATURE'S OWN INSULATION

It's nature's protective covering for animal life . . . it's a barrier against extreme outside temperature changes. HAIRINSUL is made of animal hair . . . one of the best reasons why HAIRINSUL is accepted as the finest of insulating materials for refrigerator cars.

Write for Complete Information

AMERICAN HAIR & FELT COMPANY

DEPT. H-91 MERCHANDISE MART, CHICAGO 54, ILLINOIS

GOOD IN 1935

New designs gave coach travel of the '30's at least the appearance of comfort.

BEST TODAY

Today's new coaches provide through-trip comfort *to match their luxurious appointments. Shown below is the Heywood-Wakefield "Sleepy Hollow" Seat No. 820 installed in the new B & O "Cincinnatian."*

B & O Follows the Swing To "Sleepy Hollow" Comfort

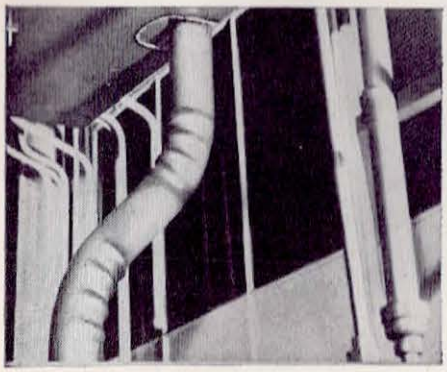
"Sleepy Hollow" design is exclusive with Heywood-Wakefield. It is based on a new, *scientific* approach to greater comfort. That's the fundamental reason why Heywood-Wakefield "Sleepy Hollow" seats are proving so satisfactory to the progressive railroads which now have them in service.

Alterations in finish, fabric and in details of outward appearance can be arranged to harmonize with the design and decor of your new equipment.

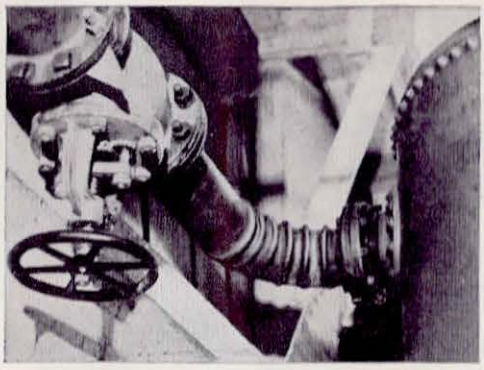
HEYWOOD-WAKEFIELD
EST. 1826
REG. U. S. PAT. OFF.

Transportation Seating Division
Gardner, Massachusetts

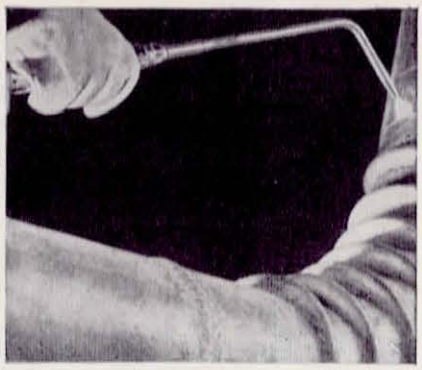
"TAILOR-MADE" bends



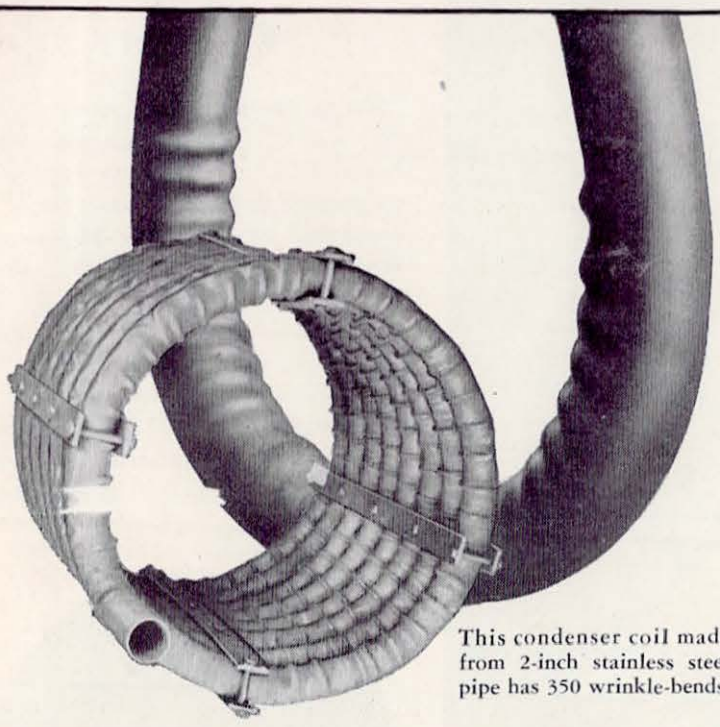
Wrinkle-bends are ideal for compound bends in continuous sections of pipe. Wrinkle-bends are leak-proof, as strong as the pipe itself, require no maintenance, and are easy to insulate.



This short-radius wrinkle-bend joins a compressed air line to a reservoir. Wrinkle-bends can be made in brass, copper, aluminum, and steel pipe from 2 inches to 26 inches in diameter.



Pipe bends can be made right on the spot with the aid of an oxy-acetylene welding blowpipe, a simple bending rig, and a few common tools. Wrinkle-bending does not reduce the thickness of pipe walls.



This condenser coil made from 2-inch stainless steel pipe has 350 wrinkle-bends.

OXWELD'S wrinkle-bending process makes possible "tailor-made" bends in water, steam, oil, and air lines in railroad shops, fueling and passenger stations, and other locations. This process decreases the need for purchasing and stocking many sizes of costly fittings.

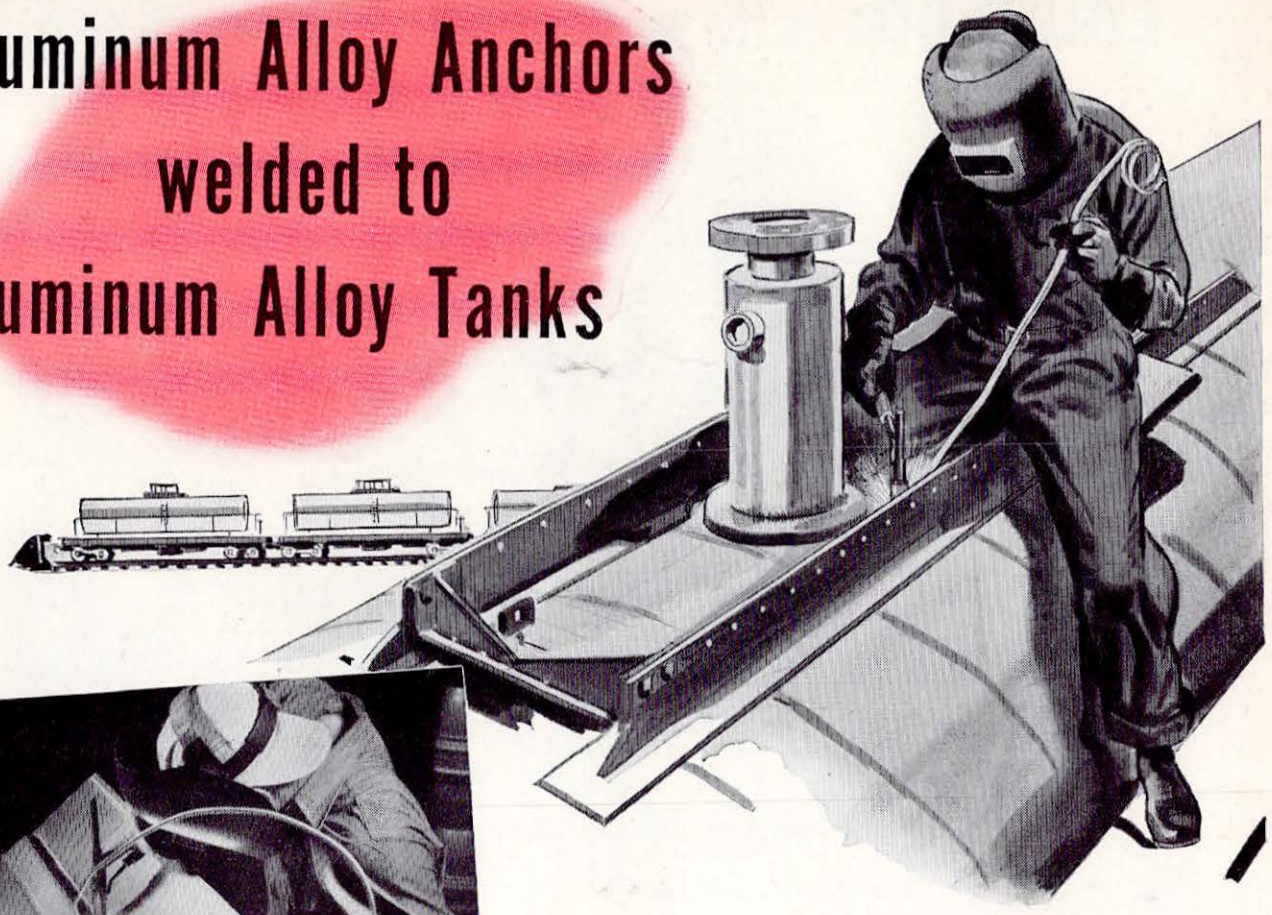
Mechanical Superintendents and Foremen, Building Engineers — write for booklet F-4993—"How to Wrinkle-Bend Ferrous and Non-Ferrous Pipe." Please address The Oxweld Railroad Service Company, 230 N. Michigan Ave., Chicago 1, Ill.

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

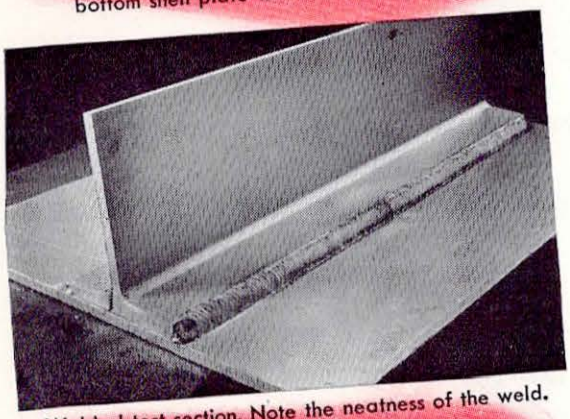
SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

The word "Oxweld" is a registered trade-mark.

Aluminum Alloy Anchors welded to Aluminum Alloy Tanks



Welding anchorage section to 5/8" thick aluminum alloy bottom shell plate with inert gas shielded arc.



Welded test section. Note the neatness of the weld.

You can get smooth, strong seams when you weld Alcoa Aluminum. Here's car-shop proof!

The largest single lot of aluminum tank cars ever built—36 cars of 8,000-gallon capacity—were delivered recently to Shell Chemical Corporation by American Car and Foundry Company. Dome, head, the seams, and the anchorage are assembled by welding.

The anchor weld especially demonstrates the advantages possible when combining Alcoa Aluminum and welded construction. Inert gas shielded arc welding was used. No flux is needed—there's no need for post-weld cleaning. Sound weld metal, minimum distortion, and high strength are obtained when the massive Alcoa 61S-T6 anchorage sections are welded to the tank.

Ask your nearby Alcoa Sales Office for a free copy of the 128-page technical manual "Welding and Brazing Alcoa Aluminum". They have Alcoa sound movies on welding to lend you, too. Or write ALUMINUM COMPANY OF AMERICA, 2178 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA REG. T. M.

ALCOA FIRST IN ALUMINUM

ENDURING is the word for both...

Courtesy of the Burlington Railroad.

DEPENDABLE SCULLIN STEEL CASTINGS SALUTE THE DEPENDABLE BURLINGTON THEY'VE SERVED SO LONG

50 YEARS' PROGRESS

For 45 of the Burlington's 100 years, Scullin has supplied this great railroad with constantly-improving locomotive and freight car castings.

As we mark our own half-century of progress, we're particularly proud that the *unfailing dependability* of Scullin Steel Castings has contributed to the Burlington's reputation for reliable service—as it has to so many other leading lines.

When you specify Scullin—you're *sure!*

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Means lower maintenance cost here!

Amcreco *Lowry Process* **Creosoted Products**

The ever increasing life expectancy of Amcreco Creosoted Products is no accident. It is the direct result of continuing research and development at Amcreco. With the tried and proven Lowry pressure creosoting process as the foundation, refinements and improvements in treatment techniques have in many instances doubled and even tripled service life in the space of the last 25 years.

Backed by this progressive program, Amcreco Creosoted Products are your best assurance of long life and minimum maintenance. For greater all-around economy on your next job, specify Amcreco.

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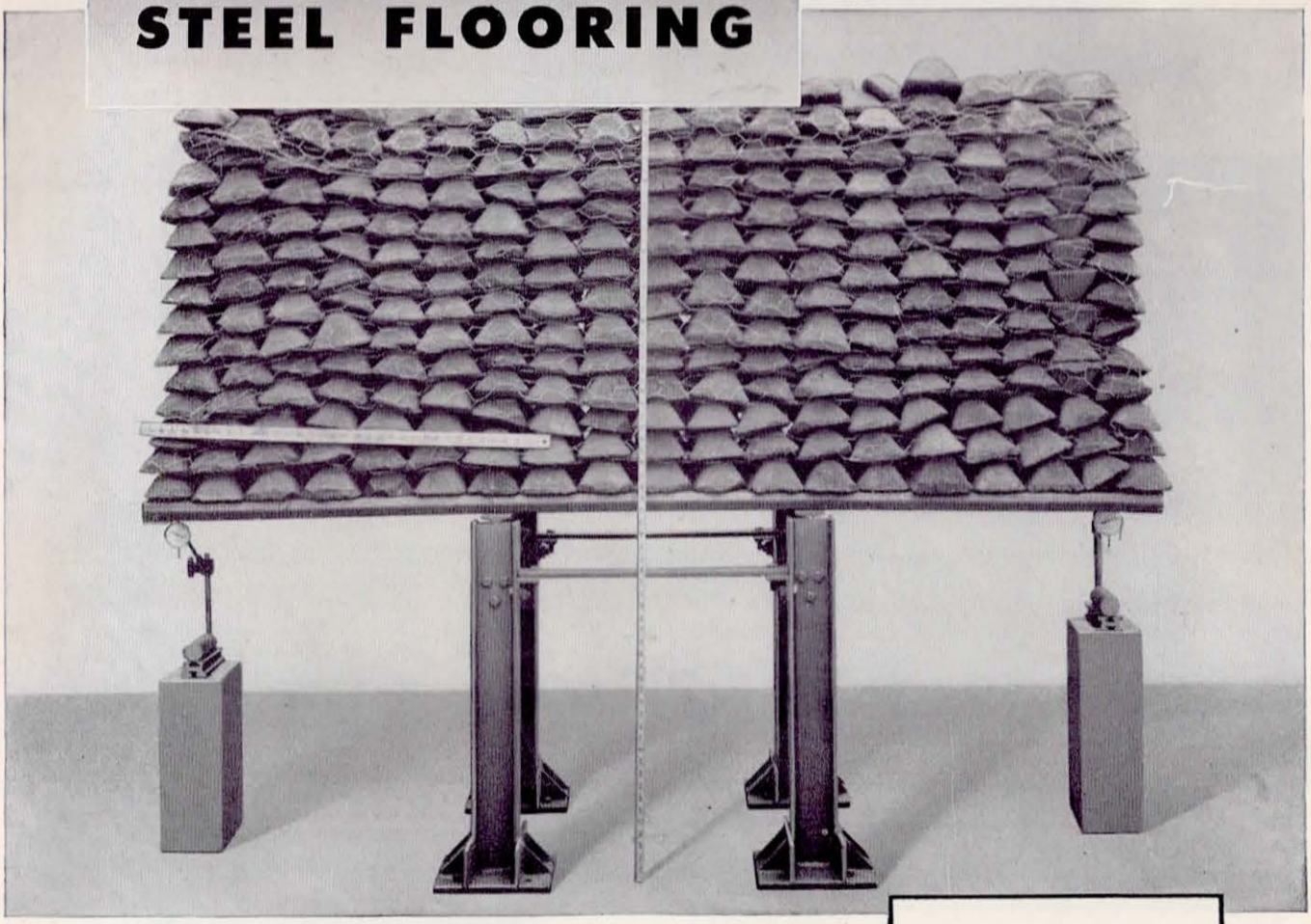
LOUISVILLE, KENTUCKY

Pressure-treated for strength that lasts!

STOP DANGEROUS AND COSTLY BOXCAR FLOOR BREAK-THROUGH WITH NAILABLE STEEL FLOORING

In Detroit Testing Laboratory test to determine cantilever strength, 11,000 lbs. of pig iron were loaded on a panel consisting of three NAILABLE STEEL FLOORING boxcar channels welded side by side. The cantilever span was 30". Under this floor load of 733 pounds per square foot—far in excess of heaviest freight loading—the NAILABLE STEEL FLOORING section *hadn't even reached the yield point.*



In actual use as well as in laboratory tests it has been proved that NAILABLE STEEL FLOORING can't break through under *any* kind of heavy freight. Boxcars with NAILABLE STEEL FLOORING have safely hauled heavy copper cakes, automobile engines, highly concentrated loads of sheet steel and tinplate as well as hundreds of other commodities.

No Fork Truck Break-Throughs Either

NAILABLE STEEL FLOORING supports the biggest fork trucks, too, which so often break through conventional floors. For example, 23 cars are spotted each day at the Wabash Railroad's Ford Loading Dock in Detroit. Although they're all new or recently rebuilt, an average of *five* or *six* cars per day come in with large holes somewhere throughout the length of the floor where fork trucks have broken through.

Durability Means Low Maintenance . . . Low Operating Costs

NAILABLE STEEL FLOORING stops the break-throughs—and a good many other common floor troubles. It isn't chewed up by pinch bars or rough freight. Although nails are tightly clinched, they don't tear, splinter or deform the floor. All this adds up to lower maintenance costs — and lower operating costs as well. When floors stay in good condition for all types of freight, cars require less switching and empty movement.

To eliminate dangerous break-throughs and reduce maintenance costs, specify NAILABLE STEEL FLOORING for the next boxcars you build or rebuild.

"Many delays and potential accidents have occurred and are continuing to occur, due to pig iron, lead, copper bars and similar commodities breaking through boxcar floors . . . this condition . . . is due to the type of equipment selected for this type of loading." (Car Department Officers Association Report by Committee on Preparation of Freight Cars, September 20, 1948)

NAILABLE STEEL FLOORING
A GREAT LAKES STEEL PRODUCT

GREAT LAKES STEEL CORPORATION

Steel Floor Division • 3576 Penobscot Building • Detroit 26, Michigan

UNIT OF NATIONAL STEEL CORPORATION

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The Sign of QUALITY — Esso — The Symbol of SERVICE

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OUR STAFF of over 2000 research scientists and technicians working in the Esso Petroleum Labs—America's largest—to bring you fine railroad fuels and lubricants.

OUR SPECIAL test-equipped, two-unit 2700 hp Diesel locomotive that carefully checks Esso Railroad Products...searching for ways that Esso Fuels and Lubricants might improve the performance and economy of your railroad equipment.

OUR SALES ENGINEER who follows up the performance of Esso Railroad Products...helping railroads get better results by using the right fuels and lubricants. Remember, whenever *any* fuel or lubrication problem comes up—call in an Esso Sales Engineer.

Plymetl

The material that's making news today

There are many reasons why Haskelite Plymetl has been specified for use in 80% of the new passenger cars now on order. Besides being sound deadening, easily fabricated and applied, its use drastically cuts deadweight. The chart below gives the strength and weight characteristics of Plymetl. It emphasizes the reasons why weight savings as high as 7600 pounds per car may be effected when Plymetl is used for partitions, bulkheads, pier panels, wainscoting and doors.

	PLYMETL UVU			STEEL U.S. STD. GAUGES			ALUMINUM B & S STD. GAUGES		
	1/4"	5/16"	3/8"	20 ga.	16 ga.	12 ga.	10 ga.	8 ga.	6 ga.
Weight in lbs. per sq. ft.	1.01	1.17	1.43	1.5	2.5	4.37	1.44	1.81	2.28
Stiffness factor E I in.^{2} lbs.	4,900	8,400	13,200	124	575	3,050	872	1,760	3,500

	PLYMETL EVE			STEEL U.S. STD. GAUGES			ALUMINUM B & S STD. GAUGES		
	1/4"	5/16"	3/8"	20 ga.	16 ga.	12 ga.	10 ga.	8 ga.	6 ga.
Weight in lbs. per sq. ft.	2.25	2.40	2.56	1.5	2.5	4.37	1.44	1.81	2.28
Stiffness factor E I in.^{2} lbs.	17,000	28,000	43,000	124	575	3,050	872	1,760	3,500

Where rigidity is of prime importance consider the following: A 3/8 in. UVU Plymetl panel (aluminum two sides) weighs 1.43 pounds per square foot. The weight of 20 gauge steel is 1.5 pounds per square foot. The Plymetl panel though lighter in weight has 100 times the stiffness of the sheet steel.

It is also true that a 3/8 in. Plymetl panel (UVU) has about the same stiffness factor as 1/4 in. aluminum; yet the 1/4 in. aluminum sheet is 2-1/2 times heavier than the 3/8 in. Plymetl panel.

In computing the values of Plymetl, the following is assumed: (1) The modulus of elasticity of steel, 30,000,000 lbs. per sq. in. (2) The modulus of elasticity of aluminum, 10,000,000 lbs. per sq. in. (3) The modulus of elasticity for the core material, 1,300,000 lbs. per sq. in. along the grain. 65,000 lbs. per sq. in. across the grain. (4) The thickness of steel and aluminum, .021" (27 ga.) and .015", respectively. (5) The weight of plywood plaque, 30 lbs. per cu. ft.

Plymetl is made by bonding thin sheets of metal to one or both faces of a plywood plaque. Its construction effects the most efficient distribution of these materials, combining high strength qualities of the metal surfaces with low density of woods. Result: Plymetl makes an ideal structural material, simulating an I beam with the metal surfaces taking the part of the flanges and the light weight plaque acting as the web.

Write for complete data and samples.

HASKELITE

MANUFACTURING CORPORATION

Dept. RR, Grand Rapids 2, Mich.

NEW YORK CHICAGO DETROIT
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Pittsburgh CARHIDE

Protects New-Type Freight Cars!

Durable, quick-drying synthetic finish improves appearance of Pennsylvania Railroad's Merchandise Service Cars equipped with Load Retainers

ONE of the best examples of the confidence many leading railroad companies have in Pittsburgh Railway Finishes is the use of CARHIDE by the Pennsylvania on some of its new-type giant Merchandise Service Cars.

These extra-long box cars, which carry more than double the average loading of merchandise freight without damage, are used for expedited movements throughout the Railroad.

Pittsburgh CARHIDE provides maximum protection and adds to the appearance of such cars. It goes on easily and dries within a few hours. Its smooth, extra-durable surface stays live, tough, and elastic, resists cracking and peeling caused by extremes in temperatures and retains its brilliant gloss.

Why not use CARHIDE on your wood or metal freight cars? Call on us for advisory service. Our wide experience often can save you time and money.

PITTSBURGH RAILWAY FINISHES FOR EVERY NEED

CARHIDE—For wood and metal freight cars of all types.

LAVAX SYNTHETIC ENAMELS—for locomotives and passenger cars.

STATIONHIDE—to add beauty and comfort to stations.

IRONHIDE—for iron and steel structures.

SNOLITE—for signs, fences, cattle-guards and crossing gates.

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Factories: Milwaukee, Wis.; Newark, N. J.; Springdale, Pa.; Houston, Texas; Los Angeles, Calif.; Portland, Ore. Ditzler Color Division, Detroit, Mich. The Thresher Paint & Varnish Co., Dayton, Ohio. Forbes Finishes Div., Cleveland, Ohio.

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One of Our Biggest Spenders —By Hungerford

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P. O. Box 478, Pittsburgh 30, Pennsylvania.

Pittsburgh CARHIDE

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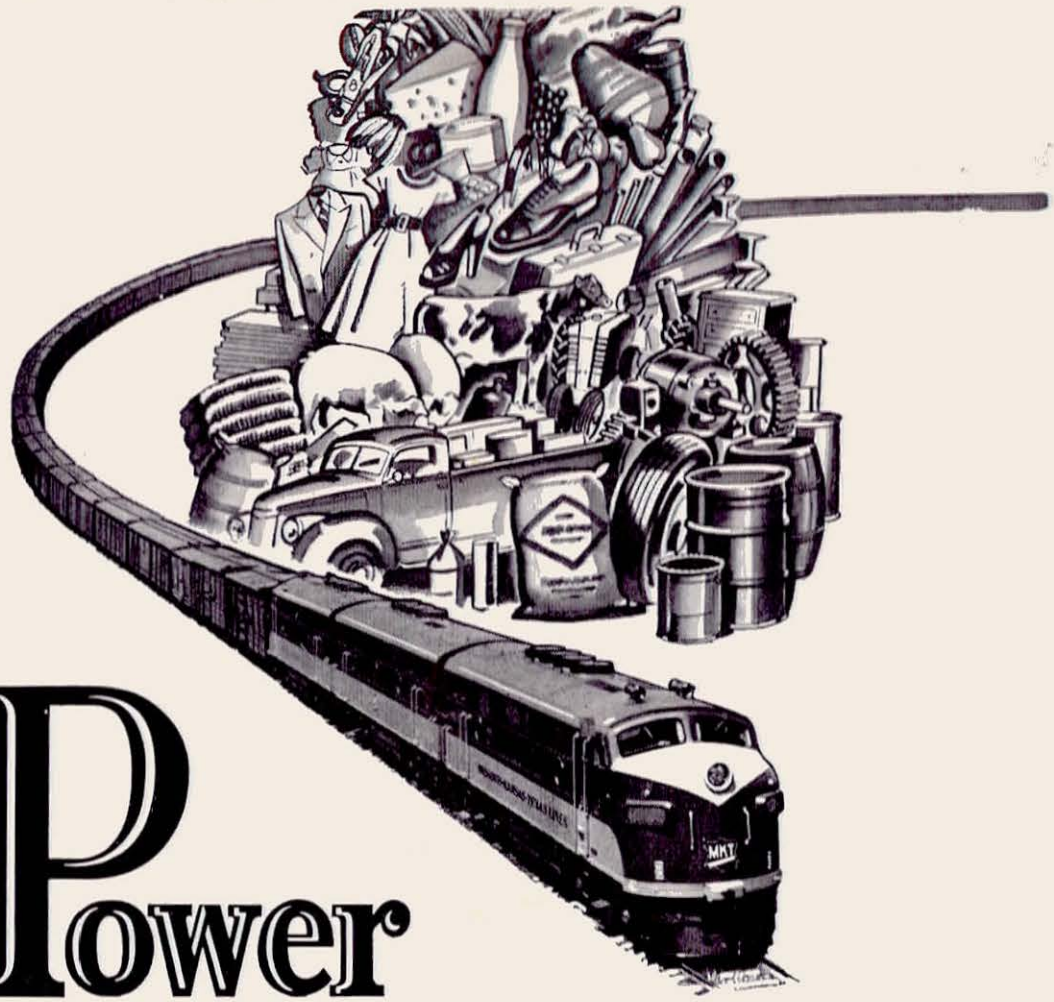

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NEW MERCHANDISE CARS
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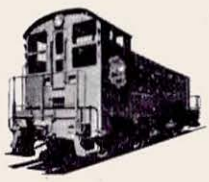
NEW HOPPER CARS
... available for quick, efficient, versatile service to shippers.



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... to expedite transfer of your freight at major terminals — and road haul it with speed and economy.

YOURS ON THE *Katy*

SMOOTH DIESEL POWER ... to deliver your goods in perfect condition. High-speed power that permits scheduling to suit your every shipping need.

DIESEL POWERED SWITCHERS ... at important terminals to expedite the transfer of your carloads to markets and factories.

RADIO POWER ... a magic service PLUS to speed handling of your freight.

Katy's equipped for even heavier, longer hauls, smoother handling of your shipments—dependable, on-time service between Texas and Oklahoma and the North. For careful, precision shipping to and from the Southwest ... ship KATY!

MISSOURI-KANSAS-TEXAS LINES

Ship Via The Southwest's Main Supply Line

KATY BULLET
Daily from Kansas City and St. Louis to all main Southwestern points.

KATY KOMET
Katy's fastest—Southbound daily from St. Louis to all main-line points.

KATY KLIPPER
Daily, St. Louis and Kansas City to Oklahoma and Texas.

KATY PACKER
Northbound daily, Fort Worth to Kansas City and St. Louis.

"72" FAST FREIGHT
Daily from Texas and Oklahoma to Kansas City and St. Louis.

Also ... Convenient Double Daily Service between St. Louis and Kansas City.

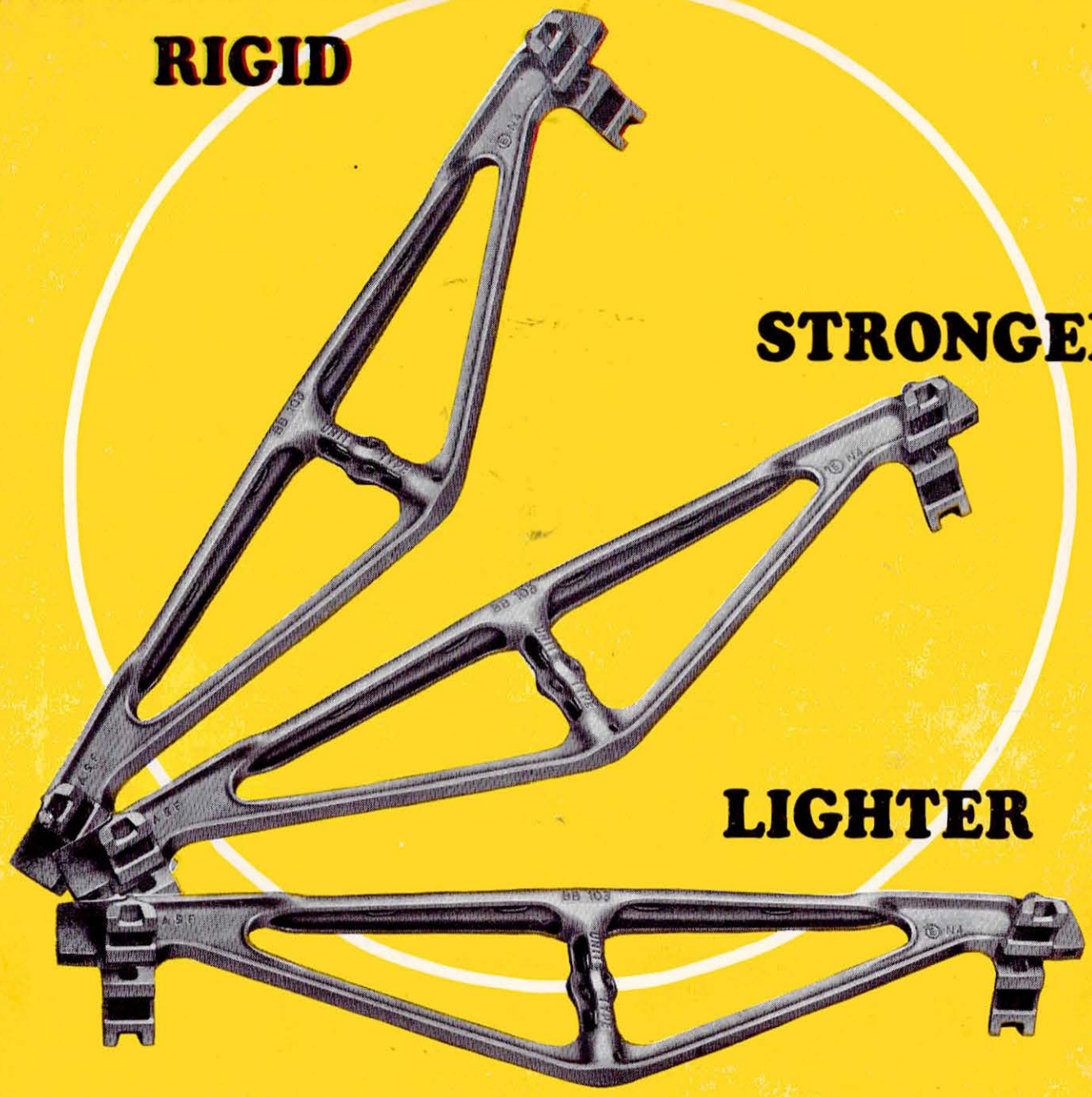
M-K-T
KATY RAILROAD
MISSOURI-KANSAS-TEXAS

178

PERMANENTLY RIGID

STRONGER

LIGHTER



A·S·F cast-steel unit brake beam

THE LOGICAL INSTALLATION for ALL FREIGHT EQUIPMENT

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MINT MARK OF ⬡ FINE CAST STEEL

One of Our Biggest Spenders —By Hungerford

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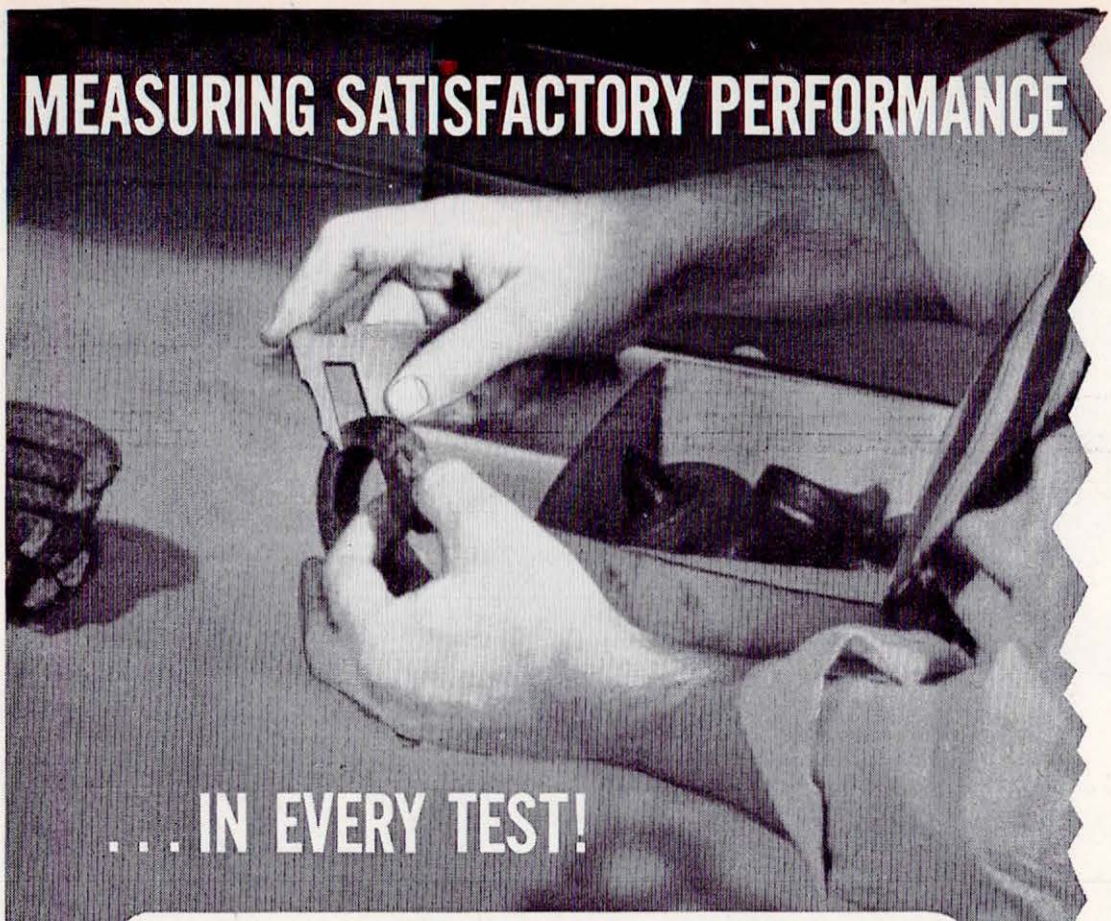

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Packings to be efficient must be perfect in fit . . . must form a tight seal in pumps, flanges, valve stems, piston rods to prevent leaks . . . must be of exact quality to meet the operating requirements of specific conditions.

That's why Quaker Packings are "pre-tested." Carefully calipered for size and fit . . . painstakingly checked for quality. Above we see the final test, one of many pre-tests Quaker Packings must go through before they are ready for usage. Tests that are safeguards against costly leaks, troublesome shutdowns, loss of production.

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. . . because it has been pre-tested to stand pressure and resist wear. Quaker Hose is available for use with air, water, steam, volatiles, acids and gases.

FOR PEAK HORSEPOWER

Quaker belts are pre-tested for every industrial need . . . belts of all kinds that assure peak efficiency under all operating conditions.

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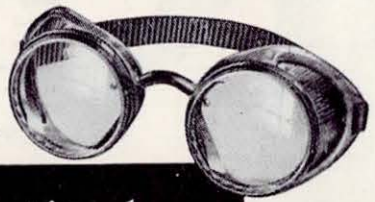
REG. U. S. PAT. OFF.

Here's One Expense Cost-Conscious Management has cut—to Rock Bottom in these Days of Rising Costs

Year after year, industrial eye accidents embezzle your profits and cut your production by sidelining able men, putting machines in the hands of less experienced workers, lowering morale, hiking claims and insurance costs. All this on top of the cost of medical service!

Aware that 98% of industrial eye accidents are preventable, many companies have solved this problem by installing an adequate eye protection program with results like this: cost of eye accidents in year prior to program, $4,262.00; cost of eye accidents in first year of program, $204.59! Ask your AO Safety Representative how an AO Eye Protection Program can cut your costs.



American Optical COMPANY

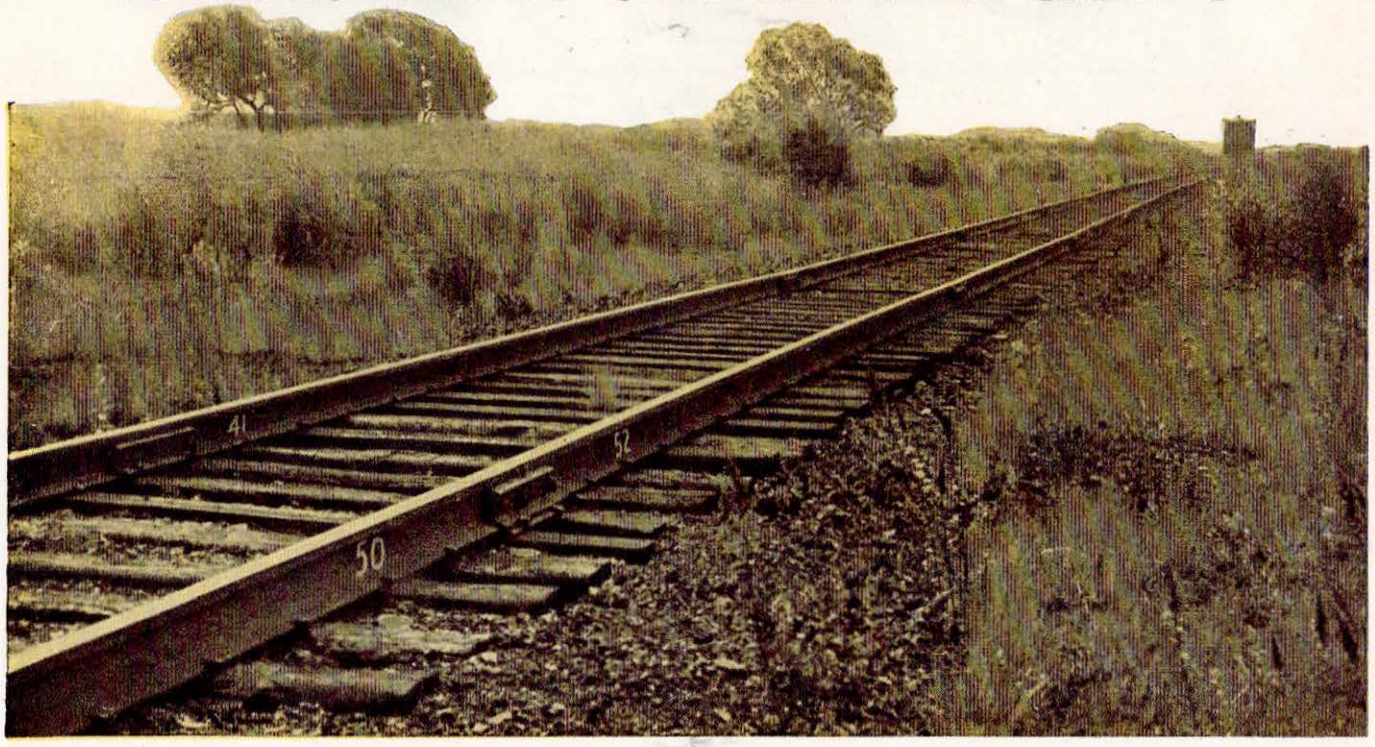
Safety Division

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

★ How Sperry Research Contributes to Railroad Safety

"The World's Worst Railroad"

IS DEDICATED TO GREATER RAIL SAFETY



Five hundred yards of typically defective rail runs close to the Sperry plant. It is the Sperry Rail Service research track, and is laid with defective rails selected from the hundreds of thousands of miles of track tested by Sperry Detector Cars.

Every type of rail defect, big and small, is represented...transverse defects...engine burn fractures...vertical and horizontal split heads ...shelly rail and flowed rail.

On this, the "world's worst railroad," new operators of Sperry Detector Cars are trained... equipment is checked and rechecked for accuracy. The perfect combination of highly skilled technicians and sensitive equipment is achieved.

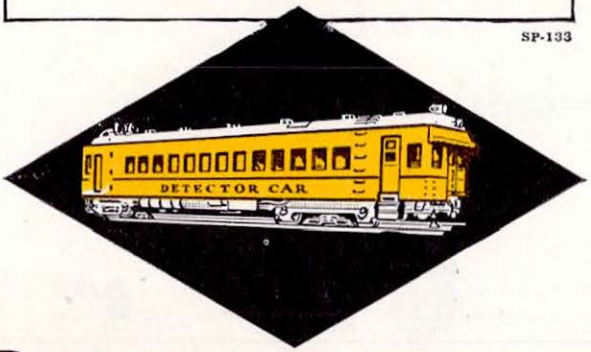
This is but one aspect of Sperry's research, dedicated to helping America's progressive railroads achieve the best in rail safety through the best in rail testing.

REMEMBER

Only Sperry consistently detects small transverse defects.

Only Sperry consistently detects longitudinal defects.

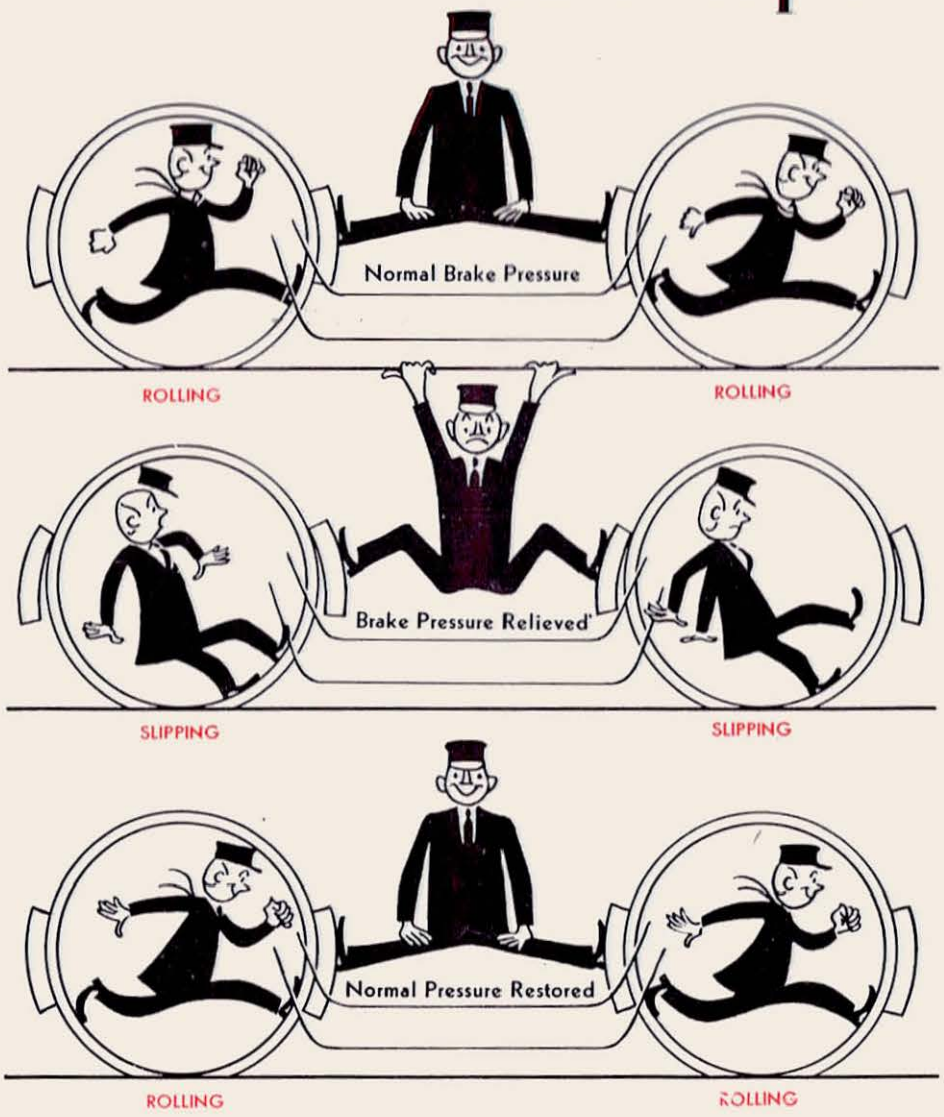
SP-133



SPERRY RAIL SERVICE

DIVISION OF SPERRY PRODUCTS, INC.
DANBURY, CONN.

"AP" Decelostat for Wheel Slip Detection



Westinghouse AP Mechanical-Pneumatic DECELOSTAT

As every railroad man knows—the aim in braking is to maintain *maximum* retardation under *all* rail conditions. That's where the Westinghouse AP Mechanical-Pneumatic Decelostat comes in.

At the first hint of wheel slip, this device momentarily relieves braking pressure, permitting wheels to regain train speed. Braking pressure is restored immediately to train level.

The Westinghouse AP Decelostat is of simple, positive mechanical-pneumatic design. All equipment is on the truck. No additional connections are required to car body, thus providing free interchange of trucks with complete wheel slip protection regardless of truck assignment.

Bulletin DL2461-1 gives the whole story. Ask for a copy.

Westinghouse Air Brake Co.

WILMERDING, PA

Vol. 126, No. 7 February 12, 1949

RAILWAY AGE

With which are incorporated the Railway Review, the Railway Gazette, and the Railway-Age Gazette. Name Registered in U. S. Patent Office.

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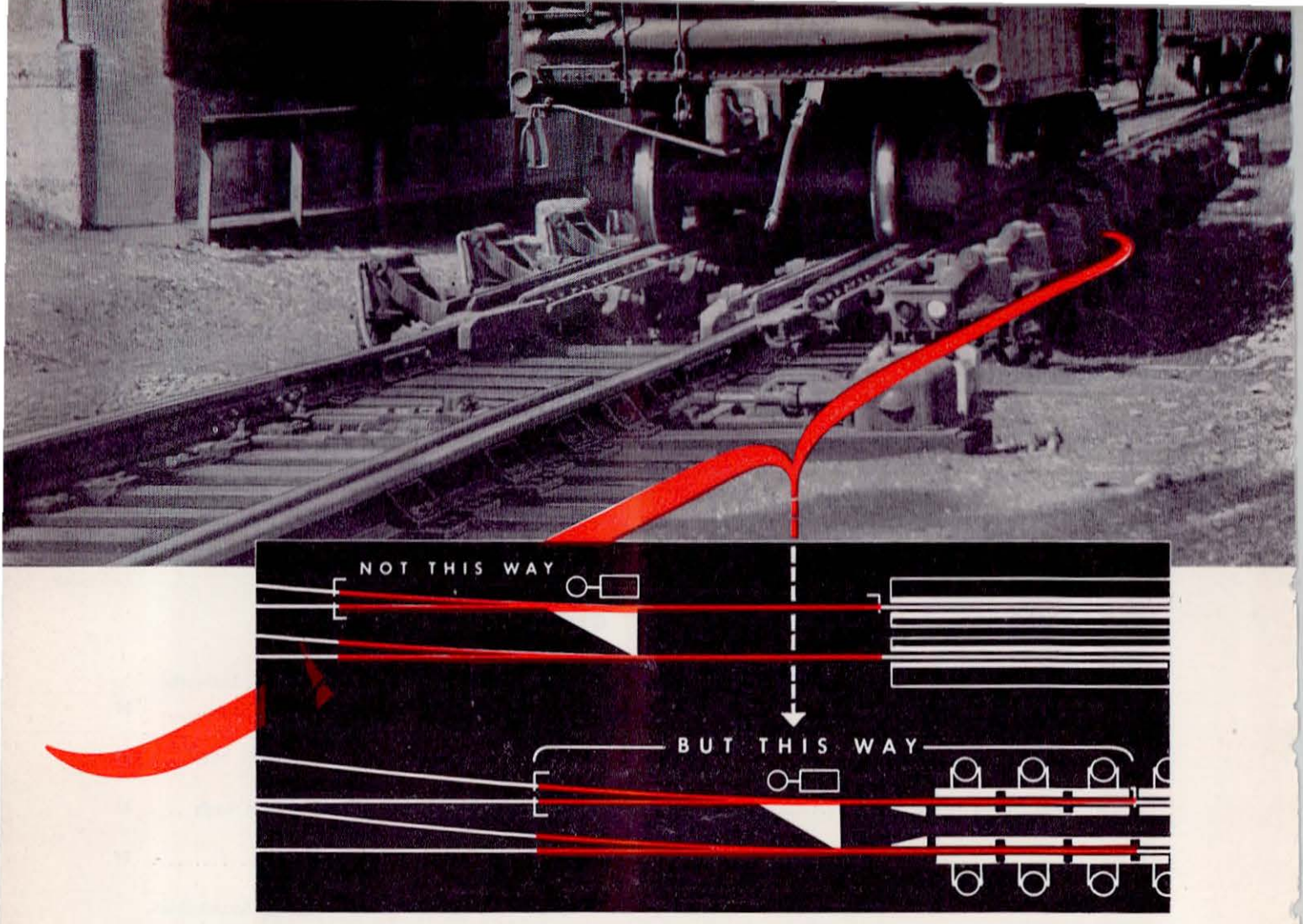


You do *not* need additional yard space ... for DETECTOR CIRCUITS

In car retarder yards, detector track circuits are used to prevent moving power-operated switches under cars. Such circuits customarily extend from a minimum distance of 22 feet in advance of the switch points to approximately 30 feet inside the switch.

No yard space is wasted in obtaining this protection with "Union" Model 31 Retarders. An insulated joint is installed on one rail between the third and fourth retarder cylinders from the leaving end of the retarder. The unit construction of the retarder permits a separation of the brake shoes and brake beams at this point . . . and the air pipe, which is the only metallic connection between the retarder units on one rail and those on the other, is readily insulated . . . making possible the use of a track circuit within the retarder.

Eliminating extra lengths of track between retarders and switch points saves valuable yard space. And shortening the distance between hump and clearance points of the classification tracks—permits longer classification tracks in a given yard area. Another way "Union" Car Retarders save!

UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

WEEK AT A GLANCE

ONE YEAR OF SOCIALIZED TRANSPORT: "The first year of nationalized transport has brought the traveling public and the shippers nothing more than they would have received had the British railway companies continued to function." That is the opening sentence of an abstract, on page 52, of the Railway Gazette's review of the first year of government ownership and operation of the railways of Great Britain. Although fairly and impartially written, the review nevertheless conveys the over-all impression that the year's results have been disappointing. One of its most significant points is that the condition of the average railroad worker has not improved—and his attitude has not changed.

DIESEL LUBRICATION: Last fall Ray McBrian, engineer of standards and research for the Denver & Rio Grande Western, presented to the Pacific Railway Club a paper of such general interest to mechanical officers that it is abstracted at some length in this issue, beginning at page 38. In it, Mr. McBrian discussed methods used on his road to test Diesel lubricants so as to secure the best possible results in the way of locomotive performance and reduced maintenance costs.

SHORT TIME RATINGS: In an article starting on page 48, D. R. Campbell and T. J. Woods, transportation engineers for the Westinghouse Electric Corporation, outline a proposed method for determining just how much work Diesel motive power can do without damage to motors or generators.

"NO ORDERS—NO STEEL!": So Col. J. Monroe Johnson, director of the Office of Defense Transportation, is reported to have said in effect in Washington this week. More precisely, Col. Johnson is quoted as having warned the railroads that freight-car orders in recent months have been too small to justify the larger steel allocations he has been trying to obtain. His ideas are summarized in our News pages, which also report a favorable vote by a Senate committee on Col. Johnson's reappointment to the Interstate Commerce Commission.

1948 NET $711 MILLION: The Association of American Railroads reports 1948 net income for Class I railroads at $711 million. This and further details of the year's financial results can be found in the week's news, which begins on page 56.

SOMETHING NEW MAY BE ADDED: A new idea in long-distance common carrier transportation was advanced this week at Cleveland by H. B. Stewart, Jr., president of the Akron, Canton & Youngstown. Mr. Stewart proposes a $210-million, two-way, 130-mile elevated belt conveyor system, for coal, ore and limestone, between Lorain, Ohio, Cleveland, the Ohio river and Youngstown. His ideas appear to be technically feasible; they, along with his figures on potential traffic and rates, are summarized in the article on page 42.

FEATHERBEDS ON WHEELS: An emergency board began hearings at Chicago this week on the Brotherhood of Locomotive Engineers' proposal to turn Diesel locomotives into perambulating featherbeds by compelling employment of extra and unneeded engineers. The opening sessions —which indicated that inter-union rivalry might have a lot to do with the whole thing—are reported in our News pages. Our leading editorial comments on the implications of the proposal itself.

LARGEST OIL RACKS: Two oil-loading racks, said to be the largest in the world, located on the Missouri-Kansas-Texas at Morfa, Tex., are described on page 53.

A SOLUTION TO DIESEL WATER PROBLEMS: By installing de-ionizing plants on its Dieselized lines the Chicago, Burlington & Quncy has virtually eliminated service failures of steam generators on Diesel locomotives. For details of its program, see the article which begins on page 44.

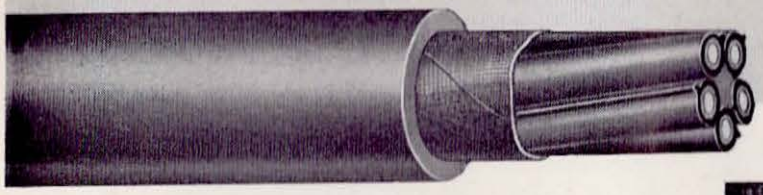
ROADBED GROUTING SAVES MONEY: An illustrated article beginning on page 46 tells how the Great Northern is reaping big savings in man-hours and ballast costs, and improving operating conditions, by grouting sections of unstable roadbed. The article, in addition to a detailed analysis of the financial returns, describes the methods and equipment employed.

COAL CONSUMPTION REDUCED: A study by the National Coal Association, reviewed in the News section, shows that installation of Diesel-electric locomotives on Class I railroads in 1948 displaced nearly 10 million tons of coal which would have been used as railroad fuel if coal-burning steam locomotives had done the work performed by the Diesels.

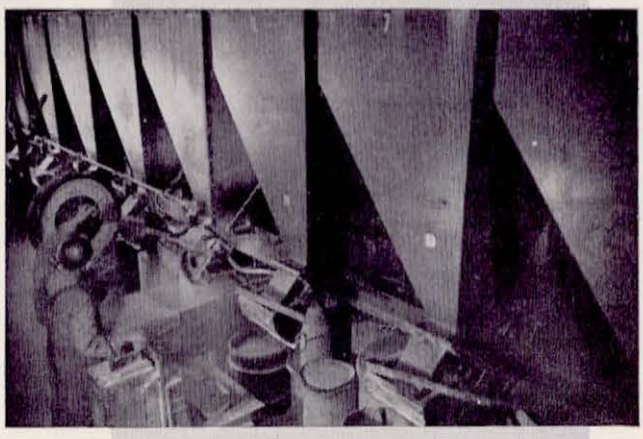
HOW TO MAKE HIGHER WAGES IMPOSSIBLE: Union demands —currently under consideration by an emergency board— for two extra and totally unnecessary men on Diesel locomotives represent the precise sort of perverted economic thinking that can only react, in the long run, to the detriment of railroad employees themselves. Our leading editorial shows, for example, what would have happened if incentive to improvement in railroad efficiency had been destroyed by earlier achievement of similar demands.

Okonite's basic formula for insulation forms basis for

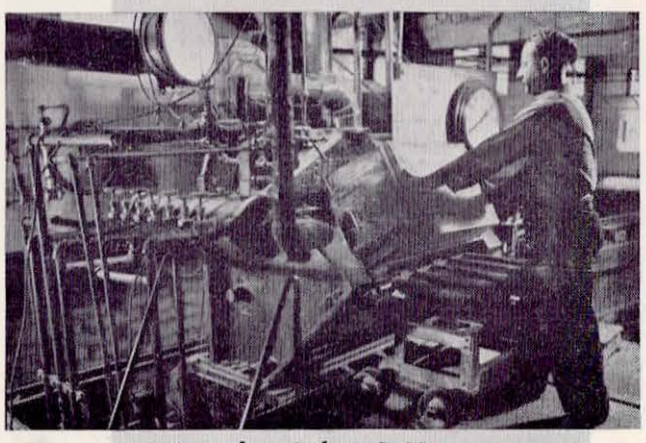
LONG CABLE LIFE



Up-River Fine Para Rubber



Balanced Mineral Ingredients



Mixed with 70 Years Experience

TODAY'S high installation and replacement costs tend to underscore the long term value of long-lived cable. And today, as always, no cable can be longer-lived than its insulation.

For 70 years, Okonite engineers have realized this. From the beginning they have adhered to the basic time-proved formula for Okonite rubber insulation. As a result, Okonite insulation remains the first choice of value-wise electrical engineers in the industrial, utility and transportation fields alike.

From the selection of the ingredients for the basic formula, through the processing and application of the finished insulation, the Okonite laboratories maintain close control at every step. For example, only natural rubber from the sturdy wild trees of the upper Amazon is permitted in the Okonite insulation. This is but one of the reasons for the long service records compiled by Okonite cables.

Note these typical examples of how Okonite insulation keeps its toughness and elasticity after long years in service:

Installation Conditions	Years In Service	Tensile Strength	Elongation 2" —
Honolulu, T. H. Communication Cable	32	1450	10.7"
New Haven, Conn. Substation Feeder Cable	30	1644	9.8"
New York, N. Y. Railroad Jumper Cable	24	1051	10.5"

There are many other railroad uses for long-lived cable made with time-tested Okonite insulation. These include signal, communication and power cables, case and instrument wiring, shop wiring, CTC aerial cable, locomotive and car wiring.

For further technical data, write for Research Publication RA-101. The Okonite Company, Passaic, New Jersey

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DESTROYING THE MEANS OF PAYING HIGHER WAGES

Many people on the management side of industry understand how it is that misuse by labor unions of their suddenly increased political power is pushing the country away from the bases of the free and thriving society which flourished on this continent for three centuries. These people realize that, to bring an end to this disastrous course, it is highly desirable to arouse union members to an understanding of the difference between union policies which could promote the national welfare and those which will irreparably injure it. Nevertheless, it does not seem to be anybody's particular business to bring this understanding to the rank and file of employees. There has, to be sure, been some pamphleteering in this direction—but the printed word can scarcely go over the heads of foremen and supervisors to inculcate a knowledge of basic economic and political principles, in which the supervisory forces themselves have received little thorough instruction.

For instance, how many railroaders beyond the hourly wage category are equipped with the knowledge needed to explain to other employees the fallacies inherent in such a "stuffed crew" proposal as that embodied in the current demand of the enginemen's unions that two additional and utterly useless employees be required to man Diesel locomotives? If foremen and supervisors cannot, as a general rule, make straight the path for employee understanding of such a simple issue, is it reasonably to be expected that employees themselves are going to attain such knowledge? And if employees continue to be kept in the dark, who is going to arrest the headlong course of unionism toward the destruction of freedom and prosperity? Certainly not the politicians who find it easier and more profitable to exploit the ignorance of the rank and file than to remove it.

Destroying Incentive for Improvement

The demand of the engine unions that the railroads employ additional and unneeded enginemen on Diesel locomotives would largely destroy the large contribution which these locomotives are making toward increased average productivity per employee. It is only because of large and constant expenditures of money for improved tools such as these Diesels that the railroads have been able to increase wages by almost 100 per cent since 1939, while they have increased freight rates less than half that much. If "mock work" rules are going to be permitted to rob improved tools on the railroads of all their higher productivity, then the railroads will have neither the incentive nor the wherewithal for further improvement in productive efficiency—which is the source, alike, of reduced rates and higher wages.

If the program of forcing the railroads to carry on each modern locomotive, and pay high wages to,

extra employees for whom there is no work whatever, is sound policy—in the interest of either the unions or the public—in 1949, then this policy would also have been in the interest of the unions and the public a long time ago, say 1911, for instance.

In that year the railroads moved 250 billion ton-miles of freight, which was less than 40 per cent of the movement in 1948, but—because trains were smaller in 1911—the freight train-miles operated in 1911 were 631 million, or 7 per cent *more* than in 1948. Suppose there had been adopted a rule back in 1911 which forced the railroads to put additional employees on the larger locomotives—so that all economic justification for purchasing bigger engines to pull bigger trains had been wiped out. If, by accepting such a handicap in 1911, the railroads had had to move their 1948 traffic in trains no bigger than those of 1911, instead of operating 590 million train-miles in 1948 as they actually did, they would have had to move an additional 900 million train-miles. At 1948 costs, such an increase of nearly a billion train-miles would have cost the railroads an additional $8.5 billion dollars in operating expenses. If the cost per train-mile had been slightly less than the actual 1948 figure, because of shorter trains, the aggregate figure would still have been fantastic.

Closing the Source of Higher Wages

Traffic would never support such costs. If the railroads had since 1911 been operating on a policy of loading up their locomotives with useless employees, as the enginemen's unions insist they do now, then either (1) all the railroads would be out of business today or (2) employees would have perforce been held to a level of wages only a fraction of that they now enjoy. The average weekly earning of railroad employees in 1914, when the work week for most jobs was 60 hours, was $14, which explains how the railroads were able to stay in business with the little engines and trains they ran in those days.

There is nothing questionable or hard to understand about such figures, and the railroads have more of them—from reliable official sources—than any other industry. Analysis of such figures leads invariably to the same conclusion, viz., the railroad industry has been able constantly to improve its service to customers, reduce its rates and increase the wages of employees because the investment of the industry in improved tools and machines has constantly increased. Shut off the supply of funds for improved tools—or, what amounts to the same thing, adopt "mock work" rules which would rob improved tools of their greater efficiency—and the source of higher wages, lower rates and improved service would be firmly closed.

The analysis and dissemination of such significant domestic statistics can be instructively supplemented by observation and report on events in Europe, where unionism is in the midst of trying to operate a socialized economy of a kind which, thus far, in this country is still more of a threat than an actuality. What is, perhaps, as handy and dependable a source of information as any available on the sorry state of the socialist-ridden Britons is the London "Economist"—which is no biased "conservative" observer, being itself pretty much dominated by the "welfare state" delusion.

The "Economist" portrays Sir Stafford Cripps, the socialist boss of the British economy, in a rather favorable light—austere, righteous, capable, striving his level damnedest to keep the nation keyed up to hard work, so the country can hold onto its "social gains" and still not flounder. Nevertheless, the "Economist" makes it clear that it is the "Marshall plan" payments which are keeping Britain going—making up the deficit which exists between what the socialist government insists upon spending and what Britons themselves are actually producing. The "Economist" does not suggest that the socialists abandon their program for securing "a larger slice of cake for the working man," but that they "stop pretending that the cake is larger than it is."

There is plenty of educational material available to show the invariable connection existing between hard work and thrift, on the one hand, and prosperity on the other. What is lacking is willingness on the part of those who know such things to go to the trouble to share their knowledge with those who do not have it.

DON'T CURB THE INQUIRING MIND

How much technological research are individual railroads justified in doing when a central research agency has been established for the same purpose? In the engineering and maintenance field, for example, the Association of American Railroads, through its Engineering Division, has a highly competent organization for conducting research aimed at improvement of the tracks and structures, and the methods of maintaining them. Does the existence of this organization relieve the individual railroads of all responsibility for doing research work having the same objective?

Obviously not—because the research staff of the Engineering Division would have to have many more men and a lot more money if it were to be called upon to initiate and follow up every worthwhile line of investigation. Such efforts as are undertaken by individual railroads will be confined largely to service tests, of course, and will more than likely be relatively limited in scope. They will

tend to lean more toward the practical than the scientific, but experience has shown that they can produce valuable results.

Another good reason why the urge to investigate, to test and to probe, should not be neglected or discouraged, even among those who have no direct responsibility for research work, is that this propensity stems from a desire to learn and to improve that is instinctive in many individuals—and to which much of the engineering progress made on the railroads can be attributed. Many of the devices, methods and machines that are widely used on the railroads today are the outcome of ideas that were first tested informally in service to prove their worth. If the desire to think and act independently in effecting improvements is allowed to languish, or is openly discouraged, the result will be the amputation of an important contributing factor in railroad progress.

Extensive overlapping of efforts should, of course, be avoided, but the cost of a small amount of duplication would be low compared to the benefits to the railroads of multilateral attack on their engineering and maintenance problems.

SAFETY IN CAR WORK

Effective safety work among car men has an important bearing not only on reduction of personal injuries in car departments but on general railway operation, because men who are careful of their personal safety tend also to be attentive in watching for defects which may cause car failures in service with attendant injury to others and damage to equipment and lading.

In an exceptionally practical and vigorous discussion of this subject at a recent meeting of the Car Foreman's Association of Chicago, J. E. Slaven, assistant superintendent of safety of the Burlington, pointed out that fatal injuries to car men were reduced from 120 in 1923 to 48 in 1947 and non-fatal reportable injuries from 14,928 in 1923 to 1,389 in 1947. These figures point to a striking improvement in safety, but at the same time, emphasize the work still to be done.

Railway managements must obviously take the lead in any really effective safety work and Mr. Slaven cited the following as some of the major contributions they have made to greater safety and ease in car department work: Individual railway safety codes, adherence to which will largely eliminate accidents; adequate guarding of machinery; modern inspection and repair pits; concrete runways; car side and roof washing machines; lift trucks for top-icing of cars; portable cranes for handling heavy materials; A-frames for handling truck sides and bolsters, and many others.

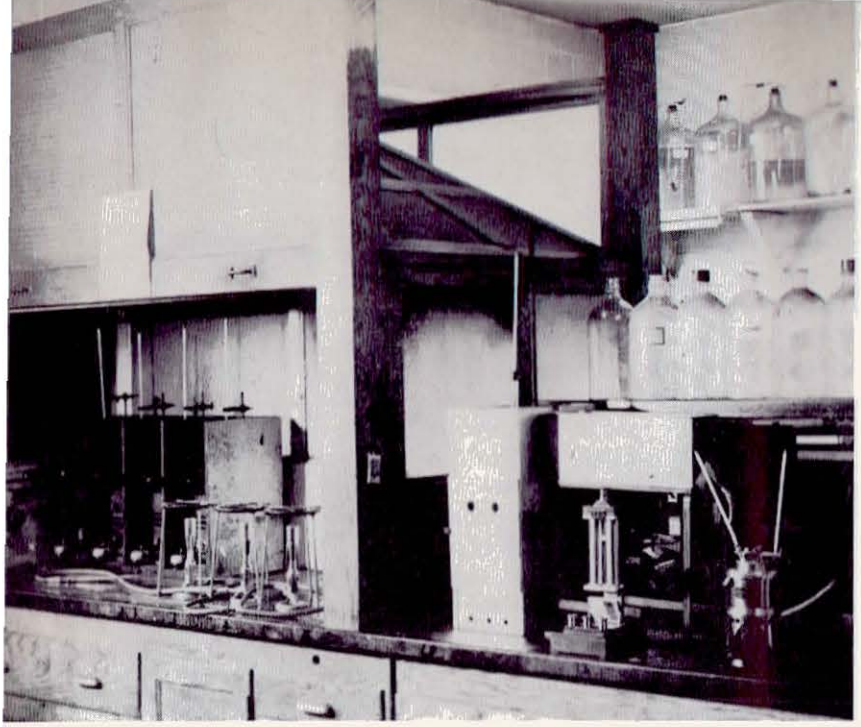
In view of all the improvements the railroads have instituted to make work safer and easier for car men, how is it possible to account for 48 killed and 1,389 injured in a single year? An analysis of individual accident cases indicates that "human" failures are the answer in a great majority of cases, and some of the ablest safety supervisors in the country admit that they don't know exactly what to do about it. The problem is aggravated by the fact that some of the most serious accidents happen to experienced men who have good previous safety records and give no indication to fellow workmen or supervisors that they are likely to have mental lapses on the days when such lapses actually occur.

Apparently the best that management can do in minimizing "man-failure" accidents is never to let up in emphasizing safety rules and instructions, both to old and new employees, at all safety meetings and in daily contacts; in taking prompt action to correct any unsafe conditions which may be found; and, above all, in encouraging both supervisors and car men always to be watchful for each others' safety. Safe habits of thought and action furnish more or less automatic protection during the inevitable periods when people become too preoccupied with trouble at home—or possibly the outcome of a horse race—to give conscious attention to safety.

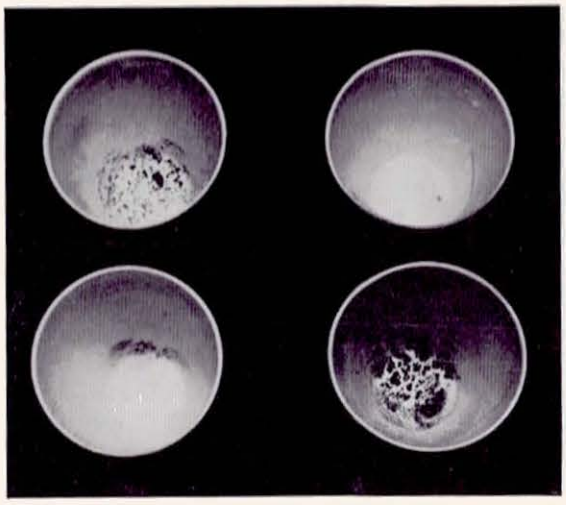
BUSINESS FOR THE ASKING

Four desks staffed with air line representatives greeted some 17,000 visitors to the recent Materials Handling Exposition at Philadelphia, Pa. The majority of those attending were important businessmen from leading industries in all parts of the country. The air line desks constituted, in effect, the first and last "exhibits" the visitors saw on arrival and departure through the only public entrance to the exhibition. A large-scale model of a four-motored passenger plane attracted many of the passers-by to within selling distance of the representatives. One air line furnished each visitor with a mimeographed sheet showing schedules from Philadelphia to 21 representative cities, and included a tear-off coupon providing space for reservation requests.

No railroad had a desk at the exposition. A timetable rack near the registration desk remained empty throughout the week. One railroad passenger representative canvassed the exhibitors—not the visitors—the day before the convention closed, inquiring if they had secured reservations for their return journeys. Most of them had—from the air line representatives who were active throughout the entire proceeding.



Portion of D. & R. G. W. laboratory showing (at left) four-unit equipment for flash-testing Diesel lubricating oils



By RAY McBRIAN,
Engineer of Standards and Research,
Denver & Rio Grande Western, Denver, Colo.

LUBRICATION OF DIESEL ENGINES USED IN LOCOMOTIVE SERVICE

A discussion of methods of securing best results with modern lubricants and test methods, as measured by improved locomotive performance and reduced maintenance*

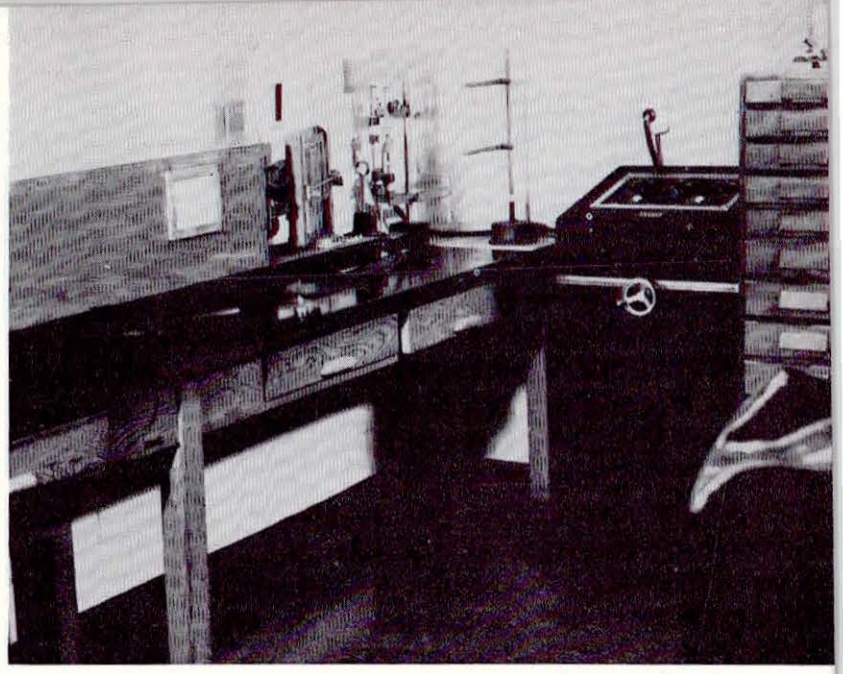
Oil producers and builders of Diesel equipment have been concerned with the development of satisfactory lubrication since the inception of the Diesel. It was soon learned that Diesel engine lubrication was a more stubborn problem than lubrication of a gasoline engine. This was due to the much higher combustion temperatures and pressures. Lubricating oils found to be satisfactory for gasoline-engine lubrication failed completely when applied to Diesel-engine operation. The higher Diesel operating temperatures caused excessive carbon formation from pyrogenic decomposition and lacquer formation from oxidation of the oil, thus resulting in ring sticking, engine deposits, corrosion and other problems. Also these gasoline-engine-type lubricants did not protect the bearings and other working surfaces from wear.

The Caterpillar Tractor Company is generally credited with causing the first general awakening to the need of research studies in the problem of Diesel lubrication. Such fundamental studies were first pioneered by the Standard Oil Company of California at Richmond, Cal. These basic studies and others led to the development of the additive Diesel-type oil for the purpose of reducing oxidation, lacquering, carbon-deposition, corrosion prevention and to secure "wetability" of the hot metal surfaces with a continuous film of oil having the necessary strength at high pressures to prevent breakdown. In addition, the additive-type oils have detergents to keep metal surfaces clean. These pioneering developments by the engine manufacturers and refiners in the early days had proceeded a long way by the time railroads began to awaken to the possibilities of Diesel-type prime movers.

The Main Objective

The problem today of Diesel lubrication in the railroad field is one important part of the major problem which is to secure the lowest possible operating and maintenance expense with the highest availability and the longest possible life of all working parts with the maximum hours in service between major ovehauls. Proper Diesel lubrication has a major duty to perform

*Abstract of a paper presented before the Pacific Railway Club at a meeting held September 9, 1948, at San Francisco, Cal.



Right—Littrow-type quartz-prism spectrograph installation at the D. & R. G. W. laboratory

Facing page—Ash samples from Diesel lubricating oils: (upper left) used additive oil; (upper right) new additive oil; (lower left) used non-additive oil; (lower right) used additive oil with excessive impurities

in this respect, but it must be remembered that it is only part of cooperative team work between the builder, the refiner and the railroad as a maintainer.

With the arrival of the first Diesel-type power on the D. & R. G. W. in 1941, we began observation as to what could be done in the way of controls, and, based upon these observations, decided that the control of Diesel-engine lubrication and resultant service performance could largely be regulated as a problem of chemical reactions in the engine crankcase. Experience has shown that if specific and regular analyses are made of used oil from each crankcase and of new unused oil before application, and if these analyses are properly interpreted, they can be utilized to prevent service failures, and to give the mechanical forces vital forehand information as to what is occurring in the engine. They also can be utilized to supply both the refiner and the engine builder with information of any seeming deficiencies which then can be studied for improvements.

A means is thus at hand to anticipate and prevent serious delays and failures; to prevent crankcase explosions and to have definite information as to wear rates, corrosion and other happenings to the engine while in service. In other words, the Diesel engine, itself, tells what is being accomplished with lubrication. Since the engine does not recognize a lubricant by trade name, a designer's designation, nor a railroad mechanic who signs for a particular job, but does have its own individuality, it is able to furnish an accurate story of what happens in service.

Each Diesel unit should be made a test laboratory unit, since laboratory engine tests either by the builder, the refiner, or the railroad, can be used only to give basic information and for screening results. When Diesels enter the railroad field, we have the problem of cyclic changes in temperature and in operating conditions. Thus the constant load and test conditions of the laboratory do not duplicate actual service usage.

Since each Diesel unit has its own individuality, each road must determine by actual analysis under its service conditions what is happening in the engine. There are a number of other factors which influence the lubrication of the engine, such as fuel, operating temperatures, maintenance factors, materials of construction, and load factor. But even with these factors to be considered, crankcase chemistry analysis and interpretations will permit detection of conditions arising from operation in time to permit necessary changes and corrections to be made.

Results on the D. & R. G. W.

Before giving some of the detailed methods employed for actual test work, I would like to present, in general, some of the results secured on the D. & R. G. W. since 1942, when the first road power was placed in service:

Mileage—A total of 5,246,815 miles was covered by four-unit freight Diesels up to January 1, 1948, availability of 88.4 per cent, based on potential hours in service.

Crankcase explosions—None.

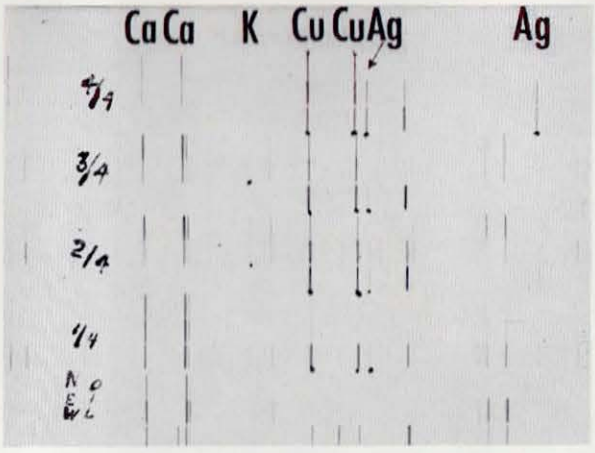
Oil drain—Draining of oil as required from tests, or for mechanical overhaul reasons; life of oil between drain periods, 150,000 to 300,000 miles.

Liners—Average age and mileage of liners in service since start of use of these locomotives, four years, three months; expected average mileage, based on present rate of wear and experience, 1,500,000 miles; average rate of wear, .001 in. per 500,000 miles; standard size liners in service, 85.31 per cent; oversize liners in service, 12.92 per cent; scrapped liners, 1.72 per cent. Oversize liners or rebored liners are all cases where scoring has occurred. No oversize liner is in service because of wear; no liners plated to secure increased life.

Piston rings—Less than 28 broken piston rings in five years of operation. We have never worn out a ring of the type which was supplied by the engine builder of these freight Diesels.

Crankshafts—Average age of crankshafts in service, four years, three months; total number 63; re-ground, 6, or 9.53 per cent. All undersize re-ground crankshafts have been necessitated by the use of bronze-back bearings.

Pistons—At present, there is only one unit of these four-unit Diesels in freight service with oversize



Enlargement of ash sample spectrogram showing presence of calcium (Ca), potassium (K), copper (Cu) and silver (Ag) in Diesel crankcase oil

liners and pistons. We have never scrapped any piston for wear. We are scrapping about four per year because of cracks, detected by Magnaflux, in the ring bolt.

Main bearings—Our experience with freight Diesels is that we have run steel-backed main bearings for 750,000 miles without appreciable wear and can expect a mileage of 1,200,000. However, with bronze-backed bearings with no appreciable wear, we find they can be expected to fail in fatigue after 200,000 miles.

Additives—Analysis of additives in new and used oil to determine the required amounts to be maintained in service.

Impurities—Determination of residual impurities in new oils from improper refinery operations, thus preventing their use.

Reclamation—Reclaiming used oil, adding new concentrated additive and re-using in regular road locomotives.

Filters—Securing proper filter maintenance, and filter materials.

Reports—The reporting to mechanical department forces of specific need for replacement, repair of out-of-line conditions, etc., as indicated by these oil tests has resulted in cooperation between the departments and the realization of what can be accomplished when tests are properly evaluated, made regularly and when specified maintenance is regularly done and with fuels and lubricants kept clean.

Control Laboratory-Test Methods

In the actual testing of Diesel crankcase oils by the methods employed on the D. & R. G. W., it is necessary to have a control laboratory. Daily tests should be made at a laboratory in the Diesel operating territory of such tests as flash, fire viscosity, etc. Regular monthly complete analysis should be made at the control laboratory by whatever method the particular railroad deems best suited to its conditions. Our equipment was selected because, for us, it gives the necessary speed, accuracy and required data.

In preparation for tests, oil samples are taken direct from each Diesel unit crankcase. The sampler is a modified Lincoln suction oil gun, having a long copper pipe tube which will fit into the oil dip stick hole. Oil sample cans of ½-pint capacity are filled, grouped together and identified by individual locomotive and unit numbers.

Samples are taken immediately upon arrival at the terminal, and in some cases where Diesels are to be turned for passenger power, a chemist meets the Diesel on arrival and takes samples enroute to shops so that tests can be completed before the locomotive is dispatched.

Oil samples are delivered to the laboratory. In the regular tests made on each arrival or trip, the flash point is first determined. Switchers are checked each month and the following tests are run: Flash point in deg. F.; precipitation number; viscosity at 100 deg. F.; viscosity at 210 deg. F.; and ash, per cent.

Flash Test—The first test is the Cleveland open-cup flash test, made with four-unit equipment. This test shows any fuel dilution. Any flash test below 360 deg. F. for road Diesels indicates dilution from fuel and the crankcase is drained to prevent crankcase explosions and excessive wear due to low viscosity. Any flash test below the normal flash point of the specific type of oil used in a particular engine is noted and the engine checked by mechanical forces, upon advice by wire or phone from the laboratory, for fuel leaks. This can be fuel line breaks, loose connections or injectors operating improperly. This test is observed also for water content; excessive water is indicated by sputtering and appearance of an emulsion in the oil or by appearance and form.

Precipitation—Precipitation number tests are run on any oil when its appearance indicates that there may be a possibility that free carbon or other dirt is present. The desired standard is to have the precipitation number below 0.05. When higher than that, various corrective measures are taken to get the precipitation number 0.05. For example, the mechanic may check the operation of the filter relief valve, or it may be found that the manufacturer's filter system will not function and the filter system is re-designed to cure the condition.

Viscosity—Viscosity tests are made on all new and reclaimed oils, as well as on the monthly locomotive test samples. The laboratory built two viscosimeter baths which handle all railroad Diesel unit tests as well as all Rio Grande Motorway tests. One viscosimeter bath is held at 210 deg. F., the other at 100 deg. F.

Ash—The ash content of the oil used in Diesel switchers where non-additive or additive oils are used is checked once every 30 days. However, if conditions require it on individual units, ash analysis may be made at more frequent intervals. Ash tests are made on receipt of all new oil shipments and each batch of reclaimed oils.

On Diesel freight and road locomotives, a set period for ash determinations is not less than 60 days, but individual units or a particular make of Diesel may, as a result of chemist's observation and experience

dictated by service requirements, result in ash contents being determined at any time without specific regularity.

The best method is burning a 20-gram sample of the oil and igniting it. Each individual brand of additive oil will show a particular weight and appearance of ash. Non-additive oils should have no ash content. The typical differences in appearance of used and new additive oil samples, when ashed, are illustrated.

How Spectrographic Analysis Is Used

The spectrograph is an ideal tool to assist in routine engine maintenance as well as in experimental work. It is an optical instrument which can be used for qualitative and quantitative chemical analysis, effected by the examination of the photographed spectrum of the substance to be analyzed.

The spectrograph used by the Denver & Rio Grande Western is the Littrow type, quartz prism.

The samples for spectrographic analysis are taken from prepared ash samples and a measured amount of ash completely burned in a d. c. arc. The samples are measured in a specially-designed measuring tool, calibrated in milligrams. The carbon arc and sampler are illustrated.

With the help of spectrographic analysis, incipient engine failures can often be detected in early stages, thus preventing more costly road failures and further excessive damage to other parts of the engine as a result of such failures. This is done through the semi-quantitative analysis of the lubricating oil for both soluble and insoluble contaminents; metallic deposits found on the crankcase screen; deposits of muck on bearings, gears and other such parts; oil-line residues, and valve scales. If excessive amounts of certain elements are detected in the analysis, a hint is given as to the location of some improper operation and the mechanic can be advised what to check. Thus time is saved in detecting the difficulty and some abnormal operation or condition can be corrected in the early stages before further and more serious damage is done.

A knowledge of the materials of which the various engine parts are made, along with the metallic constituents of the lubricants, fuel, and water-treating chemicals in use, and of the general conditions under which the engine operates, is of course necessary before comprehensive conclusions can be drawn from the analytical results.

Analysis of the lubricating oils is one of the most helpful ways of indicating the mechanical results of engine operation. Although actual amounts of the elements present in the oil may be of assistance as a method of measuring wear rates of engine parts, or determining the deterioration of additive agents in a detergent oil, they are not of as much interest to us as is the ratio of the amount found when some abnormal condition exists. Over a period of time, spectrograms are taken of lubricating oil ashes from various engines, and as experience is built up the relative amounts of the elements found in the ashes of the various types of engines become known.

If the air filtration system is inadequate or poorly maintained, elements which are commonly found in road dust will appear in excessive amounts in the oil, i.e., silicon, aluminum, titanium and magnesium. Bearing corrosion may be detected by the appearance in the spectrogram of bearing metals in solution in the lubricating oil, i.e., copper, lead, tin, antimony, silver and cadmium. Excessive wear or abrasion are also indicated in this way by the appearance of iron and aluminum, and poor oil filtration may be detected similarly. If a detergent oil is used, appearance of the lines of the additive elements in the spectrum is a good check on the amount of detergent left in the used oil. Chromium is one of the elements commonly found in water-treating chemicals, so if chrome-plated rings or liners are not used, this may be the source of an excessive amount of chromium.

Densitometer Employed Also

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It may be found, under certain conditions, on analysis of the ash content of the used crankcase oil and confirmed by spectrographic analysis, that there is a serious loss of additive from the oil in a short period of time. This deficiency of additive is due entirely to low-temperature operation and can effect the properties of the oil to such an extent that corrosion, excessive wear, lack of detergency, can result in serious operating difficulties. The limit to which additive loss can be permitted must be determined by analysis of a particular engine oil and of the metal pick up and a study of the oil condition. Studies will also show range of temperature which must be maintained.

As to the type of forms used to report tests, each railroad should develop its own forms. The important point to be emphasized is the necessity of making regular check and detailed analysis so that a history of actual happenings in each engine crankcase can be had and used for determining conditions of operation and improvements which can be secured.

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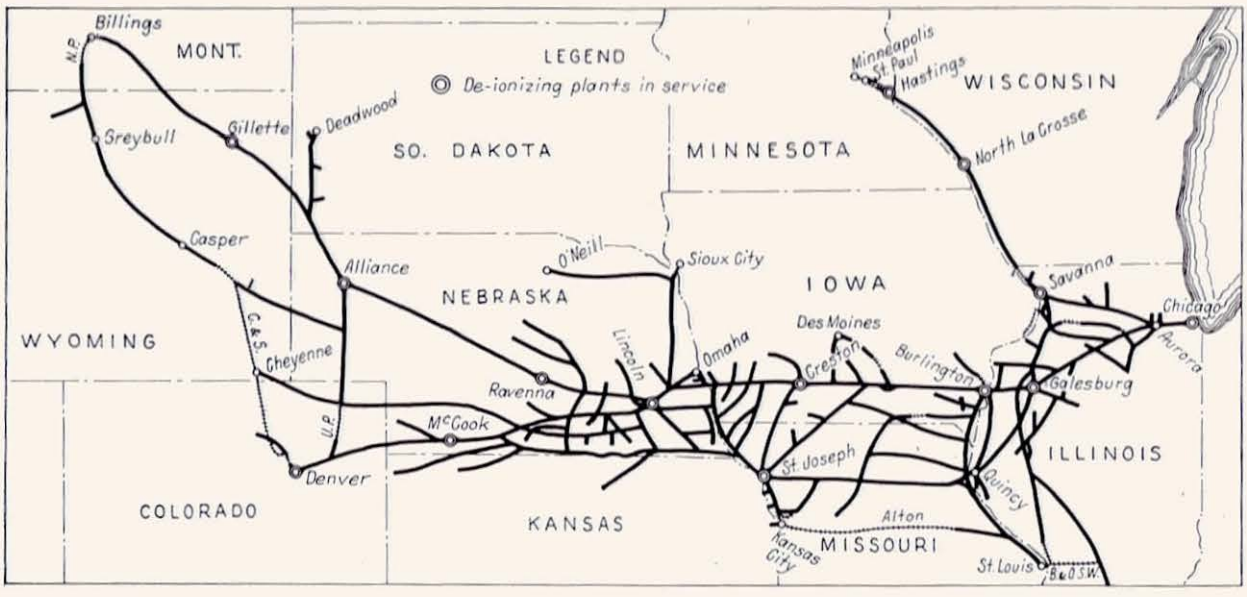
SOLVES DIESEL WATER PROBLEM ON SYSTEM BASIS



Map of the Chicago, Burlington & Quincy, showing locations of de-ionizing plants. They are spaced 150 to 160 mi. apart on the lines over which Diesels are now operated

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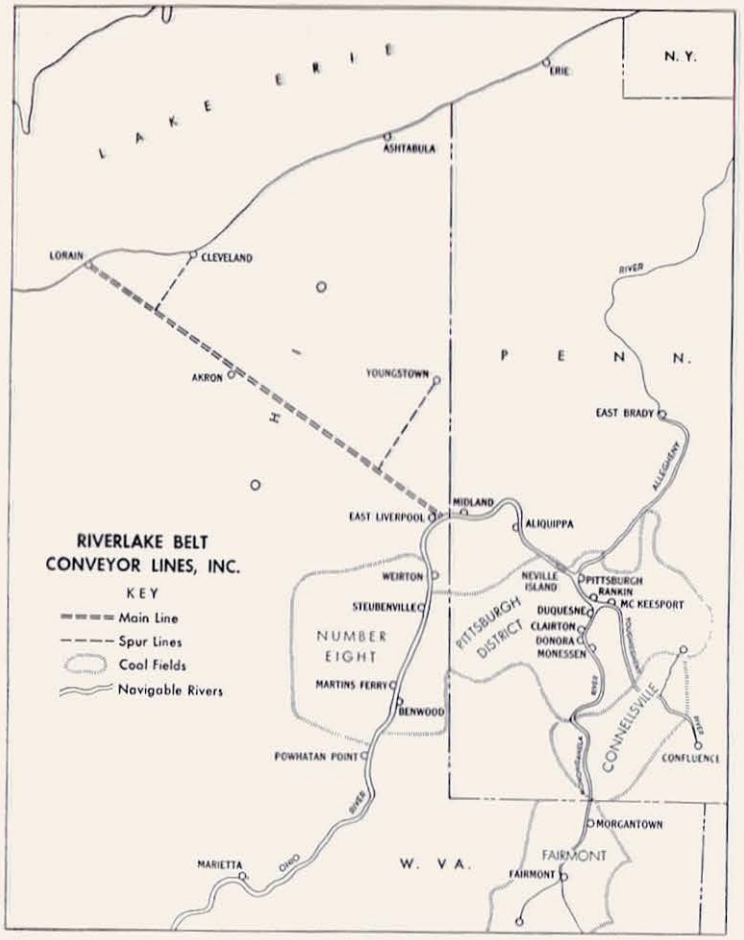


PLAN OVERHEAD FREIGHT CONVEYORS ACROSS OHIO

Competition for the railroads of Ohio—and also for projected inland waterways which their proponents hope to get built at the taxpayers' expense—in the transportation of heavy commodities, particularly iron ore and coal, is the purpose of a new corporation, the Riverlake Belt Conveyor Lines, the formation of which was announced in Cleveland, Ohio, February 10 by H. B. Stewart, Jr., president of the Akron, Canton & Youngstown.

The purpose of the new corporation is to construct a $210 million two-way elevated belt conveyor system connecting Lorain, on Lake Erie, with a point on the Ohio river in the vicinity of East Liverpool, 103 miles. Spur lines would link the main system with Cleveland and Youngstown, adding 27 miles to the project. Mr. Stewart asserted that the conveyor system—to be financed by private capital and without offering stock to the public—would reduce the annual expenditures for transportation of iron ore, limestone and coal consumed by steel mills and other heavy industries in eastern Ohio and the upper Ohio River valley, including Pittsburgh, from $20 million to $45 million annually.

Its sponsors expect construction of the conveyor system to be completed in three years. They contemplate paying off the cost of construction in 20 years with rates on coal from $0.50 to $1.50 per ton lower than those now prevailing, and with rates on iron ore delivered to steel mills in the Youngstown and Pittsburgh districts from 47 to 68 cents under present charges. The two-way rubber-belt conveyor system would have a capacity, it is estimated, of 52 million tons annually, and a minimum movement of 30 million tons annually, presumably of 15 million tons each of coal and iron ore, would be required for successful operation.

Annual savings projected at belt capacity include $9 million to steel mills in Youngstown on coal and ore shipments; $10 million to steel mills in the Pittsburgh area on iron ore alone; $2¼ million to mills in the Wheeling, W. Va., district on ore; $10 million on coal to steel mills in Cleveland and Lorain, and $13.5 million to other consumers of industrial and domestic coal in the eastern Ohio area to be served by the line.

It is planned to build modern terminal facilities, to save valuable turn-around time for lake ore vessels, and for the handling of coal and ore on the Ohio river, as separate units of the Riverlake Belt Conveyor Lines, Mr. Stewart said. Another feature will be a coal washing plant to clean and grade untreated coal en route. These facilities would cost $56 million, leaving approximately $154 million for the construction of the actual conveyor system.

"Only one-half to two-thirds of the bituminous coal produced today is properly treated and graded before leaving the mines," Mr. Stewart declared, "and the high cost of installation of cleaning equipment at the mines is retarding expansion of production in many coal fields. Our washing plant will pave the way for increased production that will be necessary in existing coal fields to supply our line, and it will lead to extensive new mining operations where installation of washing equipment is prohibitive."

The Pittsburgh, Connellsville and Fairmont fields on the Monongahela river in Pennsylvania and West Virginia, together with Number Eight field in Ohio, would be the primary sources of coal for the new conveyor system. Mr. Stewart estimated that 18 million additional tons of coal to supply the conveyor lines would be required out of these fields, or from other sources available to river barge lines, each year. He pointed out, however, that storage and stockpiling areas are planned along the conveyor system so the mines could operate on a steady year-around schedule.

Traffic on the upper Ohio river would almost be doubled by the additional tonnage developed by the conveyor project. In addition to the 18 million tons of new coal would be 15 million tons of ore. The total volume of all cargo handled by barge on the Ohio in 1946 was just short of 36 million tons. This increase in river traffic would require a considerable number of new barges and tow boats on the river to handle the additional volume.

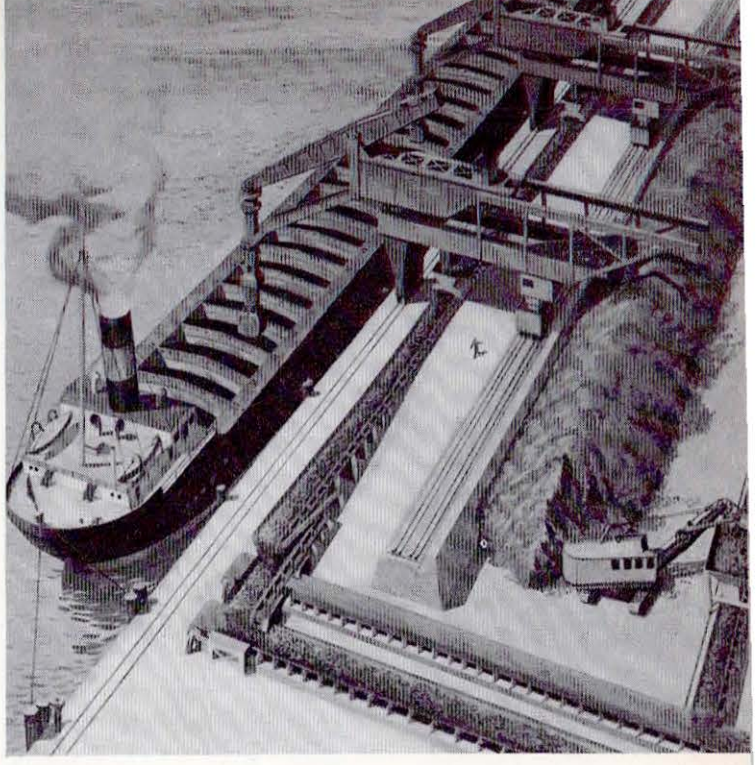
Mr. Stewart predicted many far-reaching economic repercussions from the construction of the R.B.C. Lines, among them the "stabilization" of the steel industry in this area. "This essential steel capacity must be preserved," he continued. "With freight rates constantly rising, the future outlook at the moment is

not assuring. Cheaper coal and cheaper iron ore will retain plants in localities where now there is some danger of curtailed operations and even the possible loss of the industry. The lower cost of the basic commodities may lead to increased production in many instances instead. Forty-five million dollars, or even 20 million dollars is a lot of money to cut out of production costs each year."

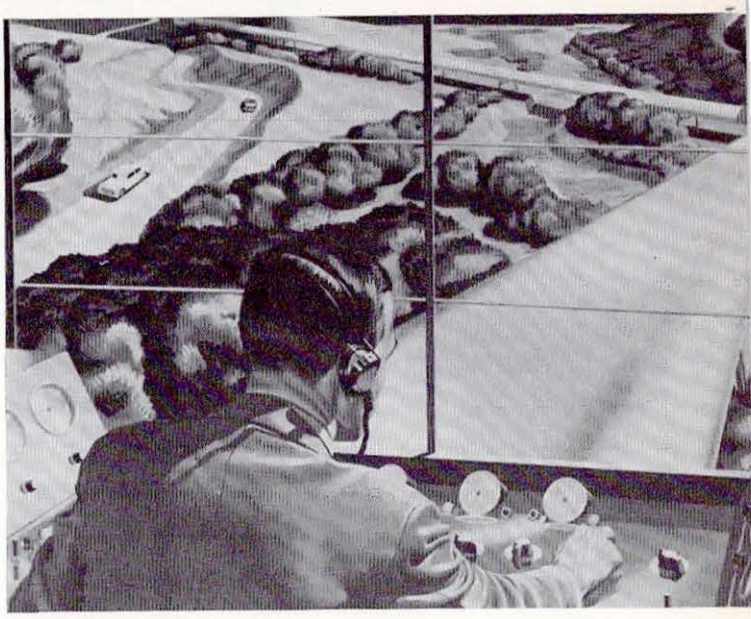
The many engineering phases of the R.B.C. Lines have reached an advanced stage in planning, Mr. Stewart explained. Belting egineers of the Goodyear Tire & Rubber Co. and the Link Belt Company and other construction, transportation and electrical experts have been working on the project for several months, he said. The elevated structure will have a minimum clearance of 22 feet and the metal gallery atop the steel supports will be fully enclosed. Electrically operated, the belt movement will be controlled by a push button system with an electric eye warning device able to locate distress points and stop the entire line immediately.

A total of 172 belts or flights, some of them more than a mile long, will be required on the 103-mile two-way main line. This will move coal northbound over a 72-inch belt from the river at the rate of 600 ft. per min. or 3,400 tons per hour. The opposite or southbound belt will carry iron ore at the same rate of speed but because of the greater weight of the cargo the volume will total 5,400 tons per hour in a continuous flow over a 60-in. belt line.

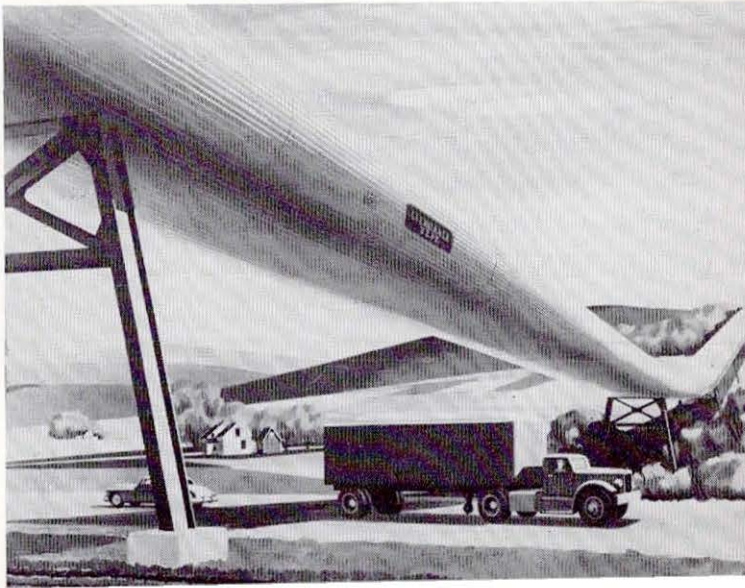
The 19-mile, 35-flight Youngstown spur will leave the main line at a point near Salem. It will be only a one-way conveyor. The nine-mile Cleveland spur will branch off near Parma and require 10 flights. The spur belts will be 42 in. in width.



Reading down: the lakeside transfer; a control tower; the overhead structure—as an artist visualizes them



Ore or coal would be conveyed 103 lake-to-river miles at 600 ft. per min., requiring 15¼ hours



Projected Conveyor System Rates, Per Ton

Coal Tonnages

	15,000,000 tons Annually	20,000,000 tons Annually
Ohio River to		
Youngstown	$ .71	$ .40
Cleveland-Akron-Lorain	$1.23	$ .79

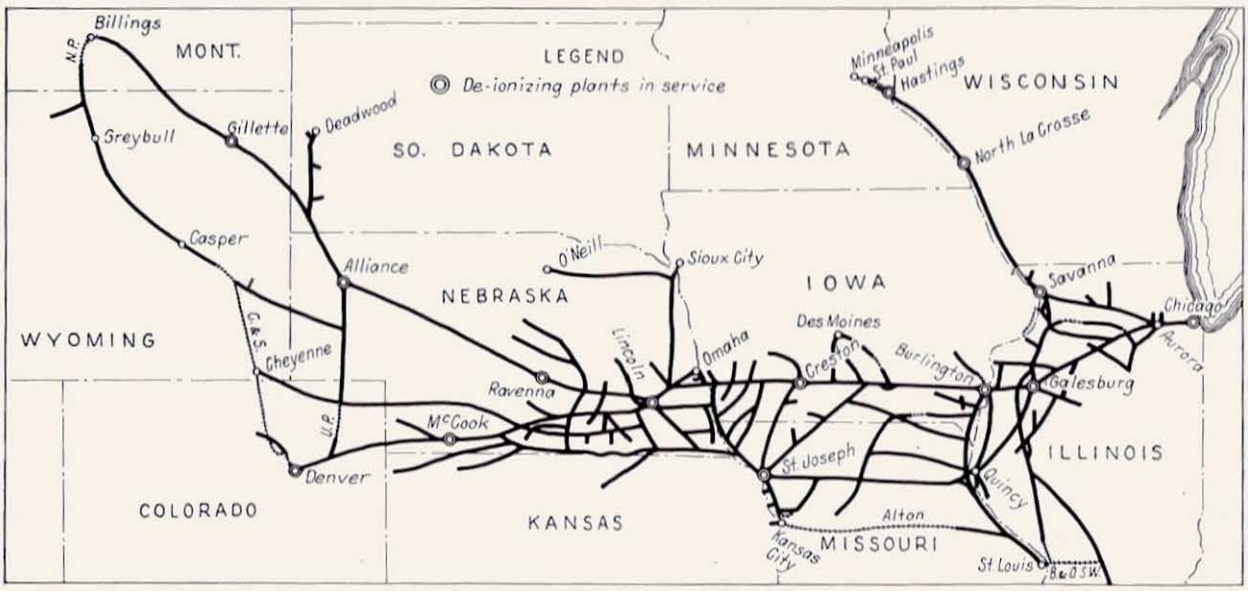
Ore Tonnages

	15,000,000 tons Annually	22,000,000 tons Annually	32,000,000 tons Annually
Lorain to			
Youngstown	$ .80	$ .77	$ .67
Ohio River	$ .80	$ .77	$ .67

Estimated Annual Freight Reductions to Industry

Minimum Traffic (15,000,000 Tons Coal, 15,000,000 Tons Ore)	
Coal 3,000,000 tons @ $ .50	$ 1,500,000
12,000,000 tons @ $ 1.06	$ 12,720,000
Ore 15,000,000 tons @ $ .43	$ 6,450,000
Minimum Annual Reduction	$ 20,670,000
Potential Annual Reductions by Areas (20,000,000 Tons Coal, 32,000,000 Tons Ore)	
Youngstown Mills	
4,500,000 tons coal @ $ .81	$ 3,240,000
10,000,000 tons ore @ $ .60	$ 6,000,000
Ohio River Mills, Upstream	
15,000,000 tons ore @ $ .66 minimum	$ 9,900,000
Ohio River Mills, Downstream	
4,000,000 tons ore @ $ .56 minimum	$ 2,240,000
Cleveland Mills	
4,000,000 tons coal @ $ 1.50	$ 6,000,000
Lorain Mills	
3,000,000 tons coal @ $ 1.50	$ 4,500,000
Akron Industries	
1,000,000 tons coal @ $ 1.50	$ 1,500,000
Other Industrial and Domestic Coal	
8,000,000 tons @ $ 1.50	$ 12,000,000
Total Potential Reduction	$ 45,380,000

SOLVES DIESEL WATER PROBLEM ON SYSTEM BASIS



Map of the Chicago, Burlington & Quincy, showing locations of de-ionizing plants. They are spaced 150 to 160 mi. apart on the lines over which Diesels are now operated

Burlington completes program to install de-ionizing plants on its Dieselized lines — Result: Failures of locomotive steam generators in service have been practically eliminated

The system-wide use of mineral-free water produced by the de-ionizing process is proving to be the solution of the water supply problem for steam generators on Diesel locomotives on the Chicago, Burlington & Quincy. The road initiated a program to install de-ionizing equipment on the Dieselized lines of the system in 1945 with the construction of four plants. Since that time 10 more installations have been added, completing the program for those lines over which Diesel locomotives are operated at the present time. Since the use of de-ionized water on a system-wide basis has been in effect only about a year, definite statistics concerning the overall results are not yet available. Failures of Diesel locomotive steam generators while in service, however, have been practically eliminated, and maintenance costs of the units have been substantially reduced as a result of using de-ionized water.

For the first Diesel locomotives placed in service the Burlington used existing water supplies without special treatment. Because of the mineral content of this water, maintenance costs of the Diesels' steam generators were high and frequent failures were experienced. Therefore, the practice was started of using condensate from stationary boilers wherever possible. The volume of condensate available, however, was limited, and to furnish condensate for the increasing number of Diesels in service would have required the installation of boilers with the sole purpose of distilling water. Since the cost of distilling water (four to five cents per gallon) was prohibitive, the road investigated the possibilities of various water treatments that would produce, at low cost, water equivalent to single-distilled water. Various studies had resulted in the decision to use such water in Diesel steam generators. The treatment decided upon was the de-ionization process. This process produces water equivalent to single-distilled water (except for the very small amount of silica that is present) at a cost of approximately one cent per 1,000 gal. per grain of dissolved minerals removed.

The de-ionizing process is based on the fact that solids dissolved in water are in the form of positively and negatively charged ions, most of which can be

extracted from solution by contact with certain synthetic resins. The positively-charged ions are called cations and those negatively charged are anions.

Theory of the De-ionizing Process

A typical de-ionizing system is composed of three major units—a cation exchanger, an anion exchanger-adsorber, and a decarbonator. The water to be treated passes through each of these units in succession. The cation exchanger is a rubber-lined tank containing a synthetic resin which extracts from the water metallic cations held in solution, giving up in exchange positively-charged hydrogen ions. These ions combine with the anions in the water to form acids. The acid-bearing water then passes into the anion exchanger-adsorber, also a rubber-lined tank, where a different synthetic resin extracts from solution the acids (except carbonic acid) passed through the cation exchanger. The water now containing only carbonic acid (plus any silica originally present), enters the decarbonator. In this tank, as the water percolates downward through a filtering medium, the carbonic acid breaks down into carbon dioxide and and water, and the released carbon dioxide, scrubbed from the water by an up-flowing current of air, is vented with the air at the top of the decarbonator.

The water flowing from the decarbonator contains oxygen and residual traces of free carbon dioxide and may, therefore, have corrosive tendencies. These tendencies are neutralized by a finishing treatment designed to adust the pH factor (a measure of the acidity or alkalinity of any water) to any desired value, to eliminate harmful dissolved gases, and to provide any special reagents required.

The exchange of ions between the resins and the water is a reversible chemical reaction and when the resins become exhausted (i.e. have reached their capacity for exchanging ions), they can be regenerated by the use of commercial chemicals to restore their normal de-ionizing efficiency.

How the Plants Were Located

The Burlington has installed the de-ionizing equipment at points selected on the basis of operating considerations only, and the condition of the raw waters at these locations was not a factor in their selection. To keep the amount of water to be delivered to individual locomotives at the minimum and to eliminate the need of auxiliary tanks, the points of water treatment and supply were located about 150 to 160 mi. apart on the Dieselized lines.

The de-ionizing systems were "tailor made" to fit the conditions at each location. Factors determining the size of individual plants included the volume of treated water required, ranging from 10,000 to 50,000 gal. daily, and the amount of dissolved solids to be removed from the water. Also influencing the design were the sizes and pressures of water supply lines, the characteristics of power supplies and the housing or floor space available.

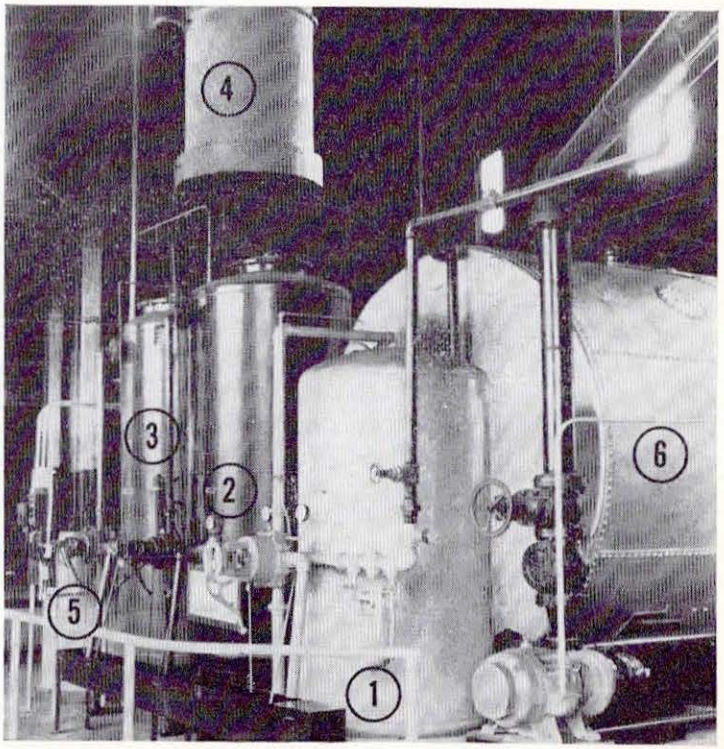
An important feature of a de-ionizing system is the relatively small space required for its installation. Advantage was taken of this feature on the Burlington by utilizing existing buildings for housing the apparatus wherever possible. The unit located at Chicago, for example, is housed in the basement of a service building; the facilities at Galesburg, Ill., and Lincoln, Neb., are located in the basements of the passenger stations; the plant at Denver, Colo., occupies space in the powerhouse; and at each of two other points a stall in an existing roundhouse is utilized. At the other eight points, however, new buildings or additions to existing buildings were necessary.

Storage tanks have been installed at each de-ionizing plant, with sufficient capacity to carry through periods when the plant is closed down for regeneration. Most of them are 12,000-gal. tanks from retired tank cars. The storage tanks are located outside the buildings housing the de-ionizing systems and are supported on concrete saddle foundations. They are protected against freezing, where necessary, by insulation and steam coils.

The de-ionizing systems on the Burlington were constructed under the general direction of H. R. Clarke, chief engineer, and under the direct supervision of A. H. Simon, engineer of buildings, assisted by W. D. Gibson, water service engineer. The tanks, piping, pumps and auxiliary equipment, from the inlet to the outlet of each system, were furnished by the manufacturer and installed by Burlington forces. Ion-exchange resins used in each system were also furnished by the manufacturer. Periodic inspections of these plants and such servicing as may be required are performed by the manufacturer. Regeneration of the plants is handled by regular employees of the Burlington who periodically take the necessary time from their regular employment to do this work.

The de-ionizing plant at La Crosse, Wis., has a capacity of 50,000 gal. per day. The various facilities shown are identified as follows: (1) Filter (necessary because river water is used); (2) cation tank; (3) anion tank; (4) decarbonator; (5) tank for finishing treatment; and (6) one of the storage tanks

Photograph courtesy Dearborn Chemical Company



One of the Great Northern's Fairmont grouting outfits in operation in the "gumbo" territory of eastern North Dakota

ROADBED GROUTING PAYS BIG DIVIDENDS

During the past three years the Great Northern has grouted 10.75 mi. of unstable track and has obtained, as a result, large savings in maintenance and improvements in operating conditions

Money spent for roadbed grouting on the Great Northern has proved to be a profitable investment, according to figures compiled by the road in connection with a roadbed stabilization program carried out during the past three years in western Minnesota, North Dakota and eastern Montana. These figures, comparing the cost of grouting with the savings in maintenance man-hours and in the amount of gravel ballast used in resurfacing, are shown in the accompanying table, along with other data concerning the grouting program. The savings shown are based on accurate records covering periods of one year before and one year after grouting, and indicate that, in man-hours of track labor alone, the stabilization work is paying for itself rapidly.

The work between Wahpeton, N. D., and Moorhead, Minn., and between Fargo, N. D., and Hillsboro, consisted of grouting soft track on low (4-ft.) fills. The section between Williston, N. D., and Saco, Mont., involved unstable fills averaging about 10 ft. in height. The work within all of these areas was carried out in 1946 and 1947. From the figures in the table it is apparent that in eastern Montana the savings in maintenance labor costs alone already have more than paid for the cost of grouting. At the other locations the figures indicate that the labor savings will offset the cost of grouting in periods up to slightly less than three years.

The grout injection pipes are driven into the roadbed by a pneumatic hammer, to a depth just above the top of the clay level

Operating Conditions Improved

In addition to the savings in man-hours and ballast, substantial improvements in operating conditions have been realized as a result of the stabilization work. In the territory between Wahpeton and Rustad, Minn., for example, it has been possible to eliminate slow orders of 30 to 35 m.p.h., which were required more than half the time over numerous stretches of track. During the past year in this territory there has been a general increase in train speeds of 10 m.p.h., resulting partly from the grouting work and partly from general drainage improvements and ballasting operations.

On the line from Fargo to Grand Forks, N. D., in the vicinity of Harwood, slow orders of 25 to 40 m.p.h. that were in effect a large part of the year have been eliminated. As a result of the grouting in 1948 of 815 ft. of unstable fill at Noyes, Minn., a 10-m.p.h. speed restriction that had been in effect for many years was lifted, permitting trains to move over the section at the normal 50-m.p.h. speed for this territory. In eastern Montana slow orders had only occasionally been required, but the need for them was eliminated at all the grouted locations.

Another favorable effect of the grouting work has been a reduction in the amount of shimming necessary during the winter. The road plans to investigate the possibilities of this phase further by grouting track which, while otherwise stable, heaves badly during freezing weather.

When the Great Northern began its grouting program in 1946 it experimented with "home-made" equipment. This equipment did not prove satis-

Summary of Roadbed Grouting Work on the Great Northern

Location	Year	Length of section in ft.	Character of track and type of instability	Cost of grouting per trk.-ft.	Man-hours saved per trk.-ft. per year	Ballast saved—cu. yd. per trk.-ft. per year
Between Wahpeton, N. D., and Moorhead, Minn.	1947	19,701	Soft track, 4-ft. fill	$1.12	0.57	0.29
Between Fargo, N. D., and Hillsboro	1946 & 1947	10,545	Soft track, 4-ft. fill	1.88	0.70	0.05
Between Williston, N. D., and Saco, Mont.	1946 & 1947	8,012	Splitting, 10-ft. fill	1.73	1.40	0.20
Between Rustad, Minn. and Wahpeton, N. D.	1948	10,738	Soft track, 4-ft. fill	1.20	....	....
Between Fargo, N. D., and Argusville	1948	879	Soft track, 3-ft. fill	4.79	....	....
East of Noyes, Minn.	1948	815	Sliding, 12-ft. fill	17.99	....	....
Between Williston, N. D., and Saco, Mont.	1948	6,087	Splitting, 10-ft. fill	3.05	....	....

factory, and in 1947 the road started using Fairmont grouting outfits. During the 1948 program seven such complete outfits were in service, divided among three grouting gangs, two each for two gangs and three for the third.

A Fairmont grouting outfit consists essentially of a grout-mixing unit—a pressure vessel in which the grout ingredients are agitated by engine-driven mixing paddles—and a number of accessories, including a dolly car for transporting the mixing unit; an inclined sand screen with hopper; a 94-gal. elevated tank with fittings and automatic nozzle; grout injector pipes of various lengths, with grout hoses and fittings; air hoses; an injector puller; a hose-repair kit; and a number of small tools. For each grouting outfit a portable air compressor provides the necessary pressure to force the grout from the mixing chamber through the hose and injectors into the roadbed. The compressor also furnishes the air to operate a pneumatic hammer used to drive the injectors into the roadbed.

The typical organization of each grouting gang having two outfits consists of a foreman and 17 men—8 men for each grouting outfit, and a truck driver. On the jobs in Minnesota and North Dakota the men were transported to and from the work in buses. In Montana, however, road accessability and the labor supply did not permit this and motor cars were used.

Two Types of Plastic Soils

As will be noted from the table—except for two locations, one in eastern Montana, and the other near Noyes, Minn.—the roadbed grouted consisted of low fills, 3 ft. to 4 ft. in height. These fills, located in the Red River valley in western Minnesota and eastern North Dakota, are composed of the natural clayey lake silts peculiar to the territory, scooped out of adjacent borrow pits during the original construction work. This material, having been deposited by glacial lakes, has a high plasticity, and when wet becomes dough-like.

The clayey lake silt of the Red River valley is often referred to as "gumbo." It is, however, a different formation than the gumbo of western North Dakota and eastern Montana, which is a weathered bentonitic Fort Union shale. The latter material, in addition to being highly plastic, increases in volume materially when wet. Grouting has been very effective in stabilizing subgrades which contain either of these plastic materials.

In the grouting operations the injectors were driven in a staggered formation on each side of the track. One line of injectors was driven along the ends of the ties, with one injector at each fourth tie. The other line of injectors was driven along the ballast shoulder, each injector being located mid-way between two of the inside injectors. All of the injectors were driven at an angle toward the center of the track to a depth that placed their discharge ends at a level just above the top surface of the clay. The grouting accomplished on the low fills amounted to about 1,000 ft. of track per six-day week, working eight hours daily.

In connection with the work in eastern Montana a Caterpillar tractor equipped with an angledozer blade was used in conjunction with the grouting to re-establish drainage where necessary and to reshape the roadbed. Side ditches were moved out from the toes of the fills, borrow pits were filled to eliminate standing water, and outlets were provided where necessary. Bulges on the sides of the fills were removed and the banks rebuilt with low-angle slopes.

Roadbed stabilization work on the Great Northern is carried out under the general direction of H. J. Seyton, chief engineer, assisted by R. R. Manion, engineer maintenance of way.

Injecting grout into the roadbed. For this section of track, grout acceptance amounted to an average of 4.34 cu. ft. per track-foot

SHORT TIME RATINGS OF DIESEL-ELECTRIC LOCOMOTIVES

A proposed method for determining just how much work this type of motive power can do without damage to motors or generators

By D. R. CAMPBELL and T. J. WOODS
Transportation Engineers, Industry Engineering Department
Westinghouse Electric Corporation

Although they have now been in general use for almost a quarter of a century, no standard methods have been adopted to determine the hauling capacity of Diesel-electric locomotives for the various services they may perform. It is recognized that the thermal capacity inherent in electrical apparatus greatly increases the value of the electrically propelled vehicle and acceptable methods of evalulating this characteristic should be available for general use. The methods presented herein are offered as a possible solution for determining tonnage hauling capacities or as a foundation on which to base a practical system acceptable to all concerned.

In the past quarter century, the Diesel-powered locomotive has developed into one of the most efficient and economical forms of motive power available to railway and industrial users. It is a versatile unit, performing equally well in all types of service, ranging from 100 hp. lightweight units used in intra-plant switching to 8,000-hp. locomotives for main-line freight service.

This versatility is due largely to the direct electrical transmission interposed between the prime mover and the driving wheels. The Diesel engine is a relatively constant torque machine having little torque variation between idling and full speed. On the other hand, the torque required at the driving wheels of a locomotive varies from the maximum demanded at starting to low values at high speed, corresponding to the available engine horsepower.

The transmission system, consisting of generators, series type motors, and control, provides an effective means of changing the constant torque of the prime mover to the ever-changing values of torque required at the rims of the driving wheels. To date, no other method of power transmission and torque conversion can equal the electrical system in reliability, economy of maintenance, and effectiveness.

The use of the Diesel-electric locomotive brought with it the problem of determining the maximum trailing tonnage the unit is capable of pulling over a given section of railroad. With the reciprocating steam locomotive, this is a simple problem. The steam locomotive can take the maximum load it is capable of starting and hauling over a given profile without damage to its component parts. Too great a load will result in stalling on the ruling grade, or inability to start the train, but no harm will result. Where running time is the determining factor, the train will be loaded with the number of cars it is capable of hauling to its destination within the scheduled time.

A paper presented at the Midwest General Meeting of the American Institute of Electrical Engineers, held in Milwaukee, Wis., October 18 to 22, 1948

In the case of the Diesel-electric locomotive, the problem is more difficult. The ability of the electrical transmission system to take loads in excess of the continuous rating invites the possibility of dangerously overloading the electric propulsion equipment in order to move a desired tonnage. The continuous rating of a Diesel-electric locomotive is the tractive force developed at the rail, expressed in pounds, for any period of time without the temperature rise of the generator or motors exceeding 120 deg. C. on the armature, or 130 deg. C. on the fields, as measured by resistance. This continuous rating, however, gives little indication of the tonnage which can be handled on short sections of heavy grade; therefore, various methods have been devised to determine the maximum tonnages which may be handled for short times, thus utilizing the electrical equipment to its fullest capacity. The ultimate of electrical loading would be an ever-changing load to compensate for the changing grade, track conditions, etc., to give a constant temperature at the maximum rated temperature rise.

Temperature Measurements

While the maximum motor current is limited by the maximum adhesion between the driving wheels and rail, which may vary from 10 to about 35 per cent, depending on track conditions, the continuous current is limited by the temperature rise of the electrical equipment. The temperature of traction motors is difficult to measure in service as it means stopping the locomotive at some point and applying temperature measuring devices. The readings then have to be extrapolated for the cooling that took place between power cut-off and the time the first temperature reading was taken. This method is unacceptable in normal service and is restricted to special testing of locomotives, therefore it is of little practical value in determining locomotive ratings.

To date, there is no practical instrument to indicate the temperature of the electrical equipment to the locomotive engineman. Even such an instrument would not completely solve the problem. It is desirable to know at the starting point what tonnage the locomotive is capable of hauling over the profile. An accurate temperature indicating device will inform the operator when to reduce the load on the electrical apparatus, but a slowdown or stop at this point may be impractical from the railroad's point of view.

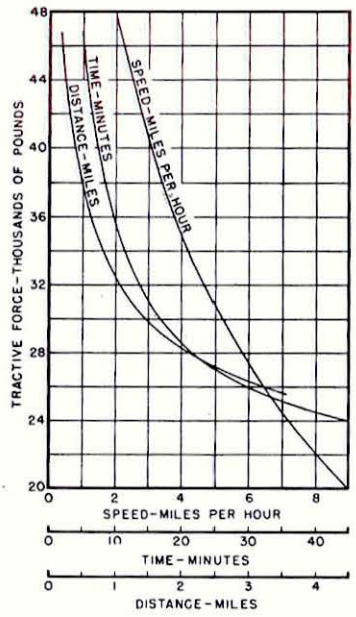


Fig. 1

Fig. 1—Curves for determination of tonnage tabulation

Fig. 2—Combined performance curve of 650-hp. locomotive

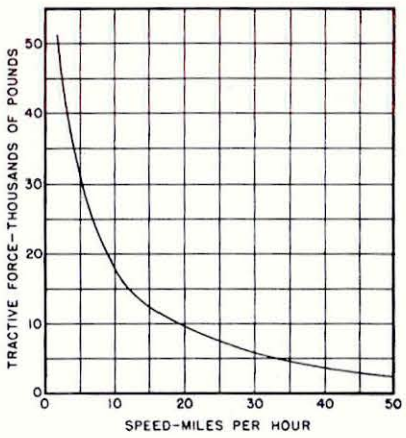


Fig. 2

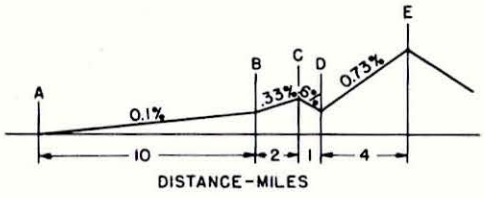


Fig. 3

Fig. 3—Typical railroad profile

There are, in general, two types of service performed by locomotives in railway work. These are classified as switching and road service. They may be further classified as yard, terminal, and hump switching, road transfer, road freight and passenger service. Because of the difference in the duty cycle for road and switching work, a different method is used in each case to determine the capability of the locomotive in that particular service. The duty cycle imposed on the electrical equipment in normal switching service is usually not of a severe nature, especially in industrial work. It usually consists of accelerating a string of cars to about 10 miles per hour, coasting a short distance, then braking to a stop. Thus, current is flowing through the traction motors for a short time only.

Experience has shown that a continuous tractive force rating of approximately 13 to 15 per cent of the weight on drivers is sufficient to handle typical switching operations without danger of overheating the elec-

Fig. 4

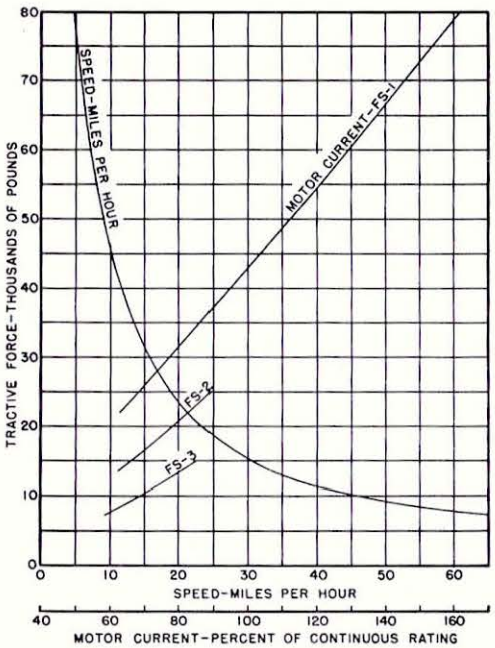


Fig. 4—Combined performance curve of 1,500-hp. locomotive

Fig. 5—Heating and cooling curves for electrical equipment on 1,500-hp. Diesel-electric locomotive

Fig. 5

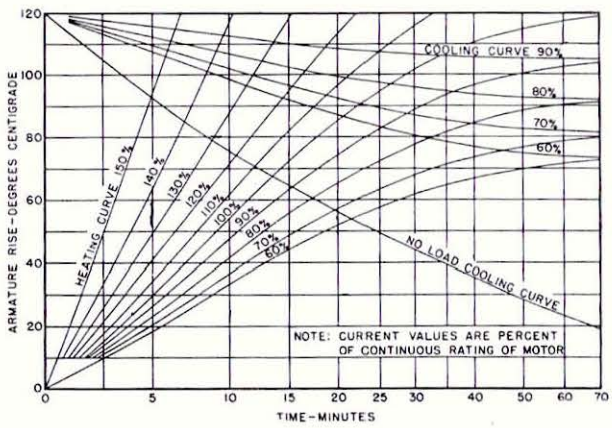


TABLE 1

Tonnage Rating for 80-Ton Diesel-Electric Locomotive, 600-hp. input to generator for traction, 8 lb. per ton train resistance, tangent track

Figures are tons trailing load

Percent Ruling Grade	½-Mile Train Movement	1-Mile Train Movement	3-Mile Train Movement	Continuous Train Movement
0	3,610*	3,610*	3,220	2,680
0.1	3,110*	3,110*	2,560	2,130
0.2	2,740*	2,620	2,120	1,760
0.3	2,450*	2,240	1,810	1,500
0.4	2,200*	1,940	1,570	1,300
0.5	2,000*	1,720	1,390	1,148
0.6	1,810	1,540	1,240	1,025
0.7	1,640	1,392	1,120	925
0.8	1,496	1,270	1,020	840
0.9	1,375	1,170	936	770
1.0	1,270	1,080	864	710
1.1	1,180	1,000	800	656
1.2	1,100	930	745	610
1.3	1,030	874	696	570
1.4	970	820	654	534
1.5	915	773	615	501
1.6	865	730	580	472
1.7	820	691	548	445
1.8	780	656	520	422
1.9	742	625	494	400
2.0	708	595	470	380
2.2	648	543	428	345
2.4	596	498	392	314
2.6	550	460	360	288
2.8	512	426	333	265
3.0	476	396	308	244

*Limited by 30 per cent adhesion; 5 lb. per ton for acceleration These trailing loads are based on the power plant operating at full speed and horsepower. These tonnages cannot be hauled if the locomotive has been operating up to continuous temperature limits. A 15-minute cooling period must be interposed before the overload operation is started if the equipment has been operating up to A.I.E.E. temperature limits.

trical equipment. Tonnage charts may be prepared for switching service for runs of different lengths and on various grades. A typical tonnage chart is shown in Table 1. This applies to a 650-hp., 80-ton locomotive, and shows the length of run and permissible trailing tonnage for a range of ruling grades. The tonnage charts are based on a 15-minute cooling period from the maximum temperature rise preceding the application of the overload. Table 1 was derived from the curves of Fig. 1. The tractive force-time curve is plotted from data obtained from motor tests and the tractive force-speed curve is part of the combined performance curve, Fig. 2. The distance curve thus shows the tractive force which can be maintained for a given distance. From this the trailing tonnage which can be hauled for a given distance, after the traction equipment has cooled for 15 minutes, is calculated by the following equation:

$$W_t = \frac{T.F.}{T.R. + 20G} - 80$$

W_t = weight of trailing train, in tons.

T.F. = tractive force, in pounds, available for a fixed distance.

G = grade, in per cent

T.R. = train resistance, in pounds per ton. This varies with the weight, number of wheels, etc., of each car. Eight pounds per ton has been assumed as an average, for the entire train.

Road service is vastly different from switching service, as the Diesel engines may be loaded to maximum output for acceleration and held at full rated load for a considerable time. This service imposes a more severe duty on the Diesel engine and electrical equipment than normal switching service. With a continuous tractive force rating of 13 to 15 per cent of the weight on drivers for passenger service and 18 to 20 per cent for freight service, the electrical maintenance should hold at a reasonable level.

As road locomotives usually operate on varying profiles, the tonnage rating may be determined by use of heating and cooling curves of traction generators and motors. This is done by assuming a tonnage somewhat greater than can be handled at the continuous rating on the ruling grade, and then calculating the temperature rise of the propulsion equipment in pulling the train over this peak grade. As an example, assume a 1,500-hp. locomotive weighing 125 tons operating on a rolling profile such as shown in Fig. 3, with a trailing load of 2,500 tons. At point A, the equipment is assumed to be 40 deg. above the ambient after doing general switching work prior to leaving the terminal. The tractive force required to handle the train on the grade section from A to B is calculated as follows:

Grade resistance = .1 x 20 lb. per ton = 2 lb. per ton
Train resistance = 5.7 lb. per ton (Davis train resistance of 40-ton car at 23 m.p.h.)
Total tractive force required = (2 + 5.7) (2,500 + 125) = 20,200 lb.

From the performance curve of this locomotive, Fig. 4, a tractive force of 20,200 lb. is developed at 23.3 m.p.h., and at 79.4 per cent current on FS-2. At this speed, neglecting acceleration, the locomotive will reach point B in 25.8 minutes. The heating and cooling curve, Fig. 5, shows 9.5 minutes at the intersection of the 40-deg. rise ordinate and the 79.4 per cent current curve, therefore, the equivalent heating time at B is 9.5+ 25.8=35.3 minutes. The intersection of the 35.3=min. abscissa and the 79.4 per cent current curve indicates a temperature of 81 deg.

The tractive force required from B to C, neglecting deceleration, is:

Grade resistance = .33 x 20 = 6.6 lb. per ton
Train resistance = 5.2 lb. per ton (Davis train resistance of 40-ton car at 16 m.p.h.)
Total tractive force required = (6.6 + 5.2) (2,500 + 125) = 31,000 lb.

From Fig. 4, 31,000 lb. tractive force is developed at 15.2 m.p.h. and 79.5 per cent current on FS-1. At 15.2 m.p.h., the time from B to C is 7.9 minutes. Starting at 81 deg., Fig. 5, 7.9 minutes on 79.5 per cent current will increase the temperature rise to 85. deg. On section C to D, no power is required; and neglecting acceleration, the train may be assumed to run at the speed limit of 40 m.p.h. for 1.5 minutes. Again referring to Fig. 5, the no-load cooling curve shows 1.5 minutes cooling reduces the temperature to 80 deg. rise.

The tractive force required from D to E, neglecting deceleration, is:

Grade resistance = .73 x 20 = 14.6 lb. per ton
Train resistance = 4.8 lb. per ton (Davis train resistance of 40-ton car at about 9 m.p.h.)
Total tractive force required = (14.6 + 4.8) (2,500 + 125) = 51,000 lb.

From Fig. 4, 51,000 lb. tractive force is developed at 8.8 m.p.h., and 114.5 per cent current on FS-1. At 8.8 m.p.h., the time from C to D is 27.3 minutes. Since the 114.5 per cent current line starting at 80 deg. crosses

the 120-deg. temperature rise in 14 minutes, in place of the 27.3 minutes required, the load must be reduced to protect the electrical equipment from early failure. The same calculations must be made again to check the temperature rise with a smaller load. It will be found that a tonnage rating of approximately 2,200 tons will apply on this profile. From the above, the heating and cooling curve method is evidently a cut-and-try proposition but gives results sufficiently accurate for general application studies.

It is to be noted that momentum, acceleration, and deceleration were not considered in the preceding example. In going from a negative to a positive grade, the train will gradually slow down until a balancing speed is reached after which a constant velocity will be maintained up the grade. Neglecting momentum and using balancing speeds will result in a slightly pessimistic answer. Because of the many variables involved, this is desirable.

Under certain conditions, it may be found necessary to consider momentum in negotiating short sections of heavy grades in which case a continuous speed-time curve will serve to determine the limiting tonnages.

A third method of calculating the severity of a service is the root mean square method as used in industrial applications. This serves well where the duty cycle is of short duration and is of a repetitious nature. In a transportation service, however, where the locomotive may be subjected to an overload on one severe grade until the maximum temperature rise is reached, the r.m.s. method does not give an accurate indication of the severity of the service. It is, therefore, not of great value in calculating locomotive tonnage ratings in mainline railway service.

Communications . . .

Unsound Purchasing Practices

To The Editor:

In the January 15 *Railway Age* you had an article—"Reciprocal Buying Coming Back." While I cannot disagree with any portion of your article, I think there is another phase that could stand a good editorial and that is the policy of some railroad president's stepping in and awarding business to personal friends without regard to what some of the mechanical and purchasing people on the railroad want.

Then there is another group on many of the railroads that you can't possibly see unless you have known them since before the Chicago Fire, and the same goes with some purchasing agents. You have at times only one weapon with people like that and that is traffic.

There is another evil in some of the railroads and that is that they will buy only from local representatives — many of whom handle a dozen or more accounts — and who are not properly equipped to service an account.

If you want to single out what's wrong with some of the railroads I'll write you a book that will be bigger than the annual statistical issue of *Railway Age*. I don't think your editorial covered the subject sufficiently.

Salesman

"Sowing Dragons' Teeth"

New Orleans, La.

To the Editor:

Primarily, the Interstate Commerce Commission was created to see that shippers were fairly treated by the railroads. Then came Section 15a of the Transportation Act (the so-called "guarantee' of a fair return to carriers), which, in effect, made the carriers also the "wards" of the commission. Meanwhile, the so-called Railway Labor Act was passed and designed to protect railroad labor, as well as the general public, from the consequences of labor-management disagreements. Each one of these legislative enactments was grounded on fair and worthy principles, but in the development of administrative agency policies they now are leading our country into economic and social chaos.

The recent decision of the Interstate Commerce Commission in Ex Parte 168, awarding temporary increases in freight rates, is causing shippers grave concern. It is not so much the measure of the awards, but the pattern pursued to get them, and the apparent grounds upon which the increases were granted.

The anomalous position in which the Interstate Commerce Commission finds itself in granting such increases is briefly as follows:

1. Railroads, on the one hand, without revenues in hand to pay the costs thereof, grant wage increases and "featherbedding" rules in negotiation with labor unions — or, on the other hand, federal agencies thrust such increased costs upon the carriers regardless of the railroads' inability to meet them. In either case, shippers have no voice whatsoever as participants.
2. Railroads then go before the commission and show that their operating costs have been increased and that they are not earning what they consider a fair return on their investments. They ask the commission to impose additional freight cost burdens on the shippers by awarding rate increases which not only will meet increased labor costs and yield the carriers a fair return on their investments, but will be high enough to make ample funds available for replacements and other expenditures to be charged to operating expenses rather than to capital investment.
3. The Interstate Commerce Commission apparently sees nothing else to do but to grant freight rate increases to the railroads, although paring down and trimming somewhat the amount of increases sought.

I sympathize with the dilemma of the commission, but labor certainly will construe this commission policy as offering a "green light" to make demands more outrageous than ever before, while railroad management undoubtedly will construe it as an approval of their pattern of "pulling quickies" in securing freight rate increases. The Shippers Stand Aghast Before It, And Are Appalled By Its Implications.

My purpose here is to help avert the inevitable end which every thinking man in this country senses and fears. Shippers must stick their necks out and show the intestinal fortitude necessary to break this vicious cycle. Individually and collectively, we must keep hammering into the heads of railroad executives that carriers must stop pursuing the lines of least resistance, keep hammering

into the heads of our representatives in Congress that the whole federal agency administrative policy touching transportation must be overhauled. Within the scope of our influence, we must hammer into the heads of the blind followers of power-drunk labor leaders that labor should not permit itself abjectly to be led into national economic, social and political chaos. Last, but not least, we must convince the Interstate Commerce Commission that it has an obligation to the general public transcending that either to labor, railroads, or shippers, as such. Wage and "feather-bedding" awards by carriers, or by federal labor bodies, that do not first insure that the carriers have revenues in hand to meet them are not binding on the Interstate Commerce Commission by any law. Such awards are indeed unlawful because, in effect, they confiscate private capital without due processes. Carriers should try this principal in the Courts of Appeal. Let carriers get the money first just like they formerly did when sanity prevailed.

If these efforts fail, then the least we can do is to have everyone within the scope of our influence understand that Socialism as the forerunner, and Communism as the ultimate is our inevitable lot. Let's forthrightly face the facts. Dragons' teeth are being sown in profusion.

A. G. T. Moore
Traffic Manager
Southern Pine Association

SOCIALIZED BRITISH RAILWAYS' FIRST YEAR

The following abstract of a year-end review by the Railway Gazette (London) of the first year of government ownership and operation of the railways of Great Britain constitutes a well-informed appraisal of the achievements of "nationalized" management to date.

The first year of nationalized transport has brought the traveling public and the shippers nothing more than they would have received had the British railway companies continued to function. Progress has been made in restoring prewar train services, seat reservation has been considerably increased, and a number of whole-day and half-day cheap-ticket facilities restored. There are more restaurant car and buffet car services. The number of serious railway accidents has been about average. There is nothing to be proud of or ashamed of in this record.

To all outward appearances the railways have continued to function in much the same way as they did under company ownership. The only sign of change has been the appearance of "British Railways" in new paint on locomotives and rolling stock and in various emblematic forms on stations, posters, stationery, and so forth.

The Railway, London Transport, and Docks & Inland Waterways Executives started functioning at the beginning of the year. . . . Much of the time of the executives has been devoted to selecting and setting up their staffs and organizations. They are mostly housed at the former Hotel Great Central, now known as 222 Marylebone Road, and which cannot have cost much less than $1 million to equip and furnish. Steps have been taken to standardize the titles of officers in the regions. Thus the title of superintendent-of-the-line has been abolished on the Western region and operating superintendent substituted. The motive power organization has been standardized and given full departmental status on all regions. A standardized mechanical and electrical engineering organization has also been instituted.

Appointments and Staff

There have been several transfers of officers from one region to another and from one department to another. No doubt these transfers have been made in conformity with the civil service tradition that any member of the administrative grade is qualified to take on any job and be moved from one government department to another without having previous experience of that department—from the Post Office to the Ministry of Transport, from the Board of Trade to the Treasury or the Home Office, and so on. How this theory will work out in the transport service time will show. We understand, too, an underlying idea is to break down regional-mindedness.

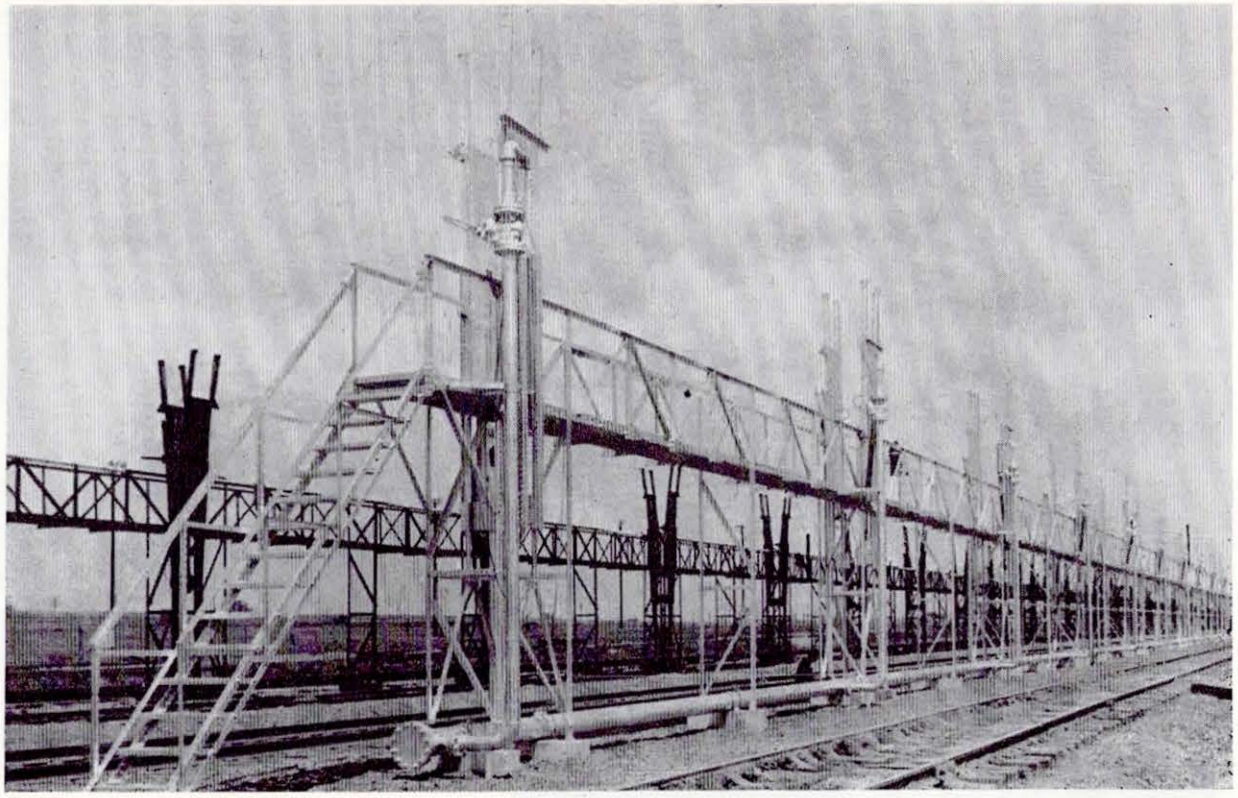
In place of the routine inspection tours by railway directors and chief officers, which were considered private business and never publicized, the commission and executive have made a number of progresses through the regions, with much handshaking, duly recorded by the attendant photographers, followed by speeches. When it becomes known that, owing to falling receipts, some 25,000 railway men and women may have to be dismissed in the near future, these progresses are likely to become less popular.

We cannot find any solid foundation for the statements that nationalization has improved the *esprit de corps* of the commission's staffs. One of the most interesting features of state ownership has been the reaction of the National Union of Railwaymen. Disappointment and disillusionment have been expressed. The establishment of the British Transport Joint Consultative Council has recently been announced, which is to have trade union representation with the five executives; but this is very far from achieving "workers' control." Recent strikes at Stratford, Waterloo, Euston, and Southampton, coupled with the N.U.R.'s claim for a further advance in wages, show conclusively that nationalization has not changed the mentality of the majority of railwaymen and transport workers in the wages grades.

When we turn to the higher grades in the commission's service we have noticed with regret that quite a number of the occupants of responsible posts appear to have lost their former gusto for the day's work. They plod along conscientiously, but a feeling of frustration has come over them and the old zest they felt for the fray has gone. This phase may be temporary; but it would be idle to ignore the loss of enthusiasm which has come about in some quarters. It is to be hoped it will not be engendered still further by too low a ceiling for the ultimate salaries of those with ambition or a cheeseparing policy of little pinpricks by the withdrawal or reduction of old-established perquisites and privileges.

A year is, of course, too short a time on which to frame definite conclusions about the great upheaval caused by the Transport Act of 1947. We are bound to say our present impressions are not favorable. But the die has been cast and we can only hope for the best. The commission and the executives are all working under great disabilities by the embargo on capital expenditure. This limits the potentialities of unification that might be effected by marshalling yards and depots in new locations, extension of electrification, and many other schemes.

We hope to continue to watch with interest developments in 1949 and to avoid any criticism that might seem to savor of prejudice against the new regime. One noticeable trait of members of the executives and their officers has been their resentment of any criticism, even constructive criticism. Such touchiness is usually a symptom of "inferiority complex."



The two loading racks at Morfa are 1,650 ft. and 1,260 ft. in length

LARGEST OIL-LOADING RACKS

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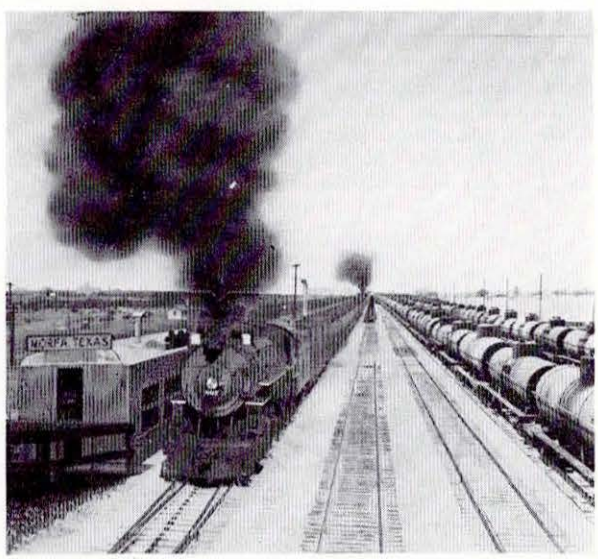


In this view the loading racks are on the left and the tracks for storing empty cars are on the right

the plan to transfer necessary activities to the I.C.C. at that time will be carried out.

Senator Tobey, Republican of New Hampshire, said he had heard it charged that the I.C.C. is at the "lowest point" in efficiency that it has ever reached. Colonel Johnson replied that, in his opinion the commission now has "more talent" than it ever had. Mr. Toby then asked if railroad management were inefficient; and the colonel said he thought management was very efficient. Senator Reed, Republican of Kansas, said he has been surprised that the commission does not defend itself against charges that it has been unduly generous in granting rate increases to the railroads. The senator pointed out that increases made in World War I and in that postwar period greatly exceeded those of recent years. Colonel Johnson noted that the commission is a quasi-judicial body which "seldom enters public controversies."

The colonel gave a negative reply to a question from Senator McFarland, Democrat of Arizona, who asked if the railroads were failing to keep abreast of the times. Whereupon Senator Tobey asked why the railroads could not be made to use "modern" signaling systems. The senator seemed to have radio, radar, etc., in mind; to him the use of a flagman seems archaic." Colonel Johnson explained that the flagman has an important assignment to protect trains; and he doesn't think the job is going to be eliminated.

Senator Tobey then asked Colonel Johnson, as a "practical railroad man," if there were not some "weakness" in the present signaling set-up. The chairman disclaimed any disposition to pose as an "expert," but he said it does seem to him that the railroads could move faster in adopting safety devices. As to the unions' demand for another man on Diesel-electric locomotives, the colonel told Senator Capehart that this is "still in the advertisement stage."

Railroads Want To Stay Exempt from Hours Act

Oppose proposal to fix statutory 40-hour week for their employees

Proposed legislation to extend the maximum-hours (40-hr. week) provisions of the Fair Labor Standards Act to all railroad employees except those in line-haul train service is opposed by the railroads. The opposition was expressed by Gregory S. Prince, assistant general solicitor of the Association of American Railroads, at February 5 hearings before the House committee on education and labor on the proposal embodied in H.R.2033, introduced by that committee's chairman—Representative Lesinski, Democrat of Michigan. A similar bill, S.653, has been introduced in the Senate by Senator Thomas, Democrat of Utah, who is chairman of that body's committee on labor and public welfare.

All railroad employees are now exempt from the act's maximum-hours provisions, although its minimum-wage provisions apply to them. The removal of the exemption as to all employees other than those in line-haul train service was recommended recently by Administrator W. R. McComb of the Department of Labor's Wage and Hour and Public Contracts divisions, in his annual report for the 1948 fiscal year. Mr. McComb also recommended extension of the maximum-hours provisions to additional employees of motor carriers and other agencies of transport, and provisions to that end are included in the Lesinski and Thomas bills.

Effect of the Proposals

The effect of the Lesinski bill's proposal as to railroad employes, Mr. Prince said, would be to apply the 40-hour-week to the non-operating employees, numbering approximately 1,000,000, and to a "substantial proportion" of the 300,000 operating employees. He went on to express the railroad industry's view that "this method of establishment of a standard work week for railroad employees is unnecessary and impracticable and will result in much confusion."

The present exemption was favored by labor organizations representing railroad employees, as well as by management, when the act was passed in 1938, Mr. Prince recalled. "No effort," he added, "has ever been made by the railroad labor organizations so far as we know to bring railroad employees under the maximum-hours provisions of the Fair Labor Standards Act." He also called attention to the present negotiations for settlement of the labor-management dispute out of which came the emergency-board report of December 17, 1948, which recommends a 40-hour week for non-operating employees, effective September 1, 1949. In making their 40-hour-week demand, Mr. Prince pointed out, the "non-ops" resorted "not to Congress but to collective bargaining under the Railway Labor Act."

Labor Conditions Different Today

The A.A.R. attorney went on to stress the "complexities" of the situation wherein changes in working rules must be made to bring them into line with the shorter work week. Legislation like that proposed in the Lesinski bill, he added, would affect only "one phase of an integrated (emergency board) report recommending a settlement of the entire existing dispute," and would "serve only to confuse the situation and to interfere with the orderly settlement of this dispute pursuant to the Railway Labor Act."

Meanwhile, Mr. Prince had said that present economic conditions, which include a "tight labor market," were entirely different from those prevailing in 1938 when the Fair Labor Standards Act was passed. Then, he added, there was a "tremendous labor surplus," and the impact of the 40-hour week on industries affected was "practically negligible." He also pointed out that manufacturing concerns had the alternative of establishing a 40-hour week to avoid overtime payments; but the railroads "are a continuous service industry and are obliged to continue their operations." In the latter connection, Mr. Prince went on to explain that employees in line-haul train service are not the only railroaders who must be on the job to maintain continuous operations. Thus, he said, the carriers would have to set up a staggered work week and recruit additional employees. "In a tight labor market such as we now have," Mr. Prince added, "this is not easy of accomplishment because finding the men and giving them the necessary training will take time."

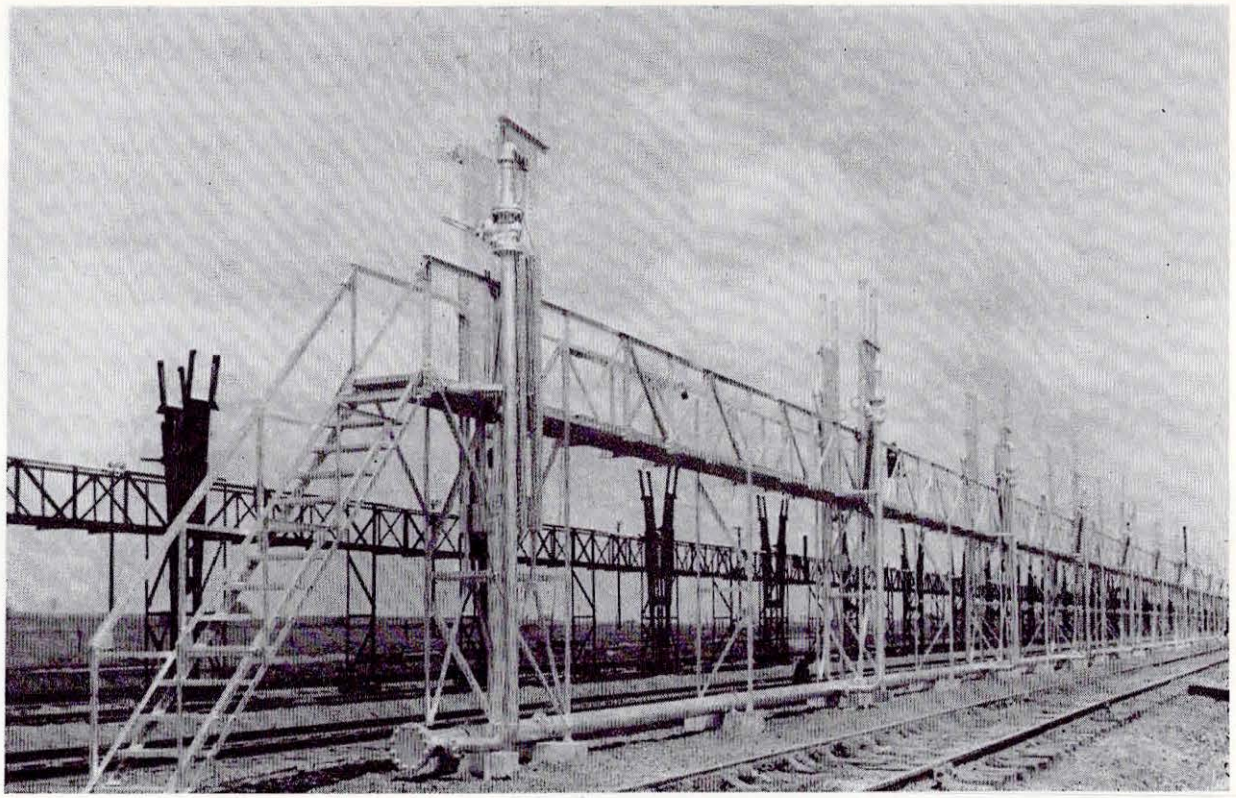
The A.A.R. attorney also addressed himself briefly to a provision of the bill which would amend the act's definition of the term "wage" so as to exclude the cost of furnishing board, lodging and other facilities to seamen and to employees engaged on a common carrier in preparation and service of food and beverages. The amended definition would still permit the "wage" figure for other employees to include the reasonable cost of providing board and lodging. The proposed amendment was opposed by Mr. Prince who asserted that it would set up an "unjustifiable discrimination." He could not see "how with respect to the matter of furnishing meals it can make the slightest difference whether the employee is employed on a common carrier or in a factory or elsewhere."

Fiscal 1948 Reviewed By Bureau of Safety

Makes usual report on inspection of equipment and other activities

The annual report of Director S. N. Mills of the Interstate Commerce Commission's Bureau of Safety for the fiscal year ended June 30, 1948, sets forth in the usual form the results of inspection of safety-appliance equipment on railroads together with information on hours-of-service of railroad employees, installation and inspection of signal systems, interlocking and automatic train-stop and train-control devices, investigation of accidents, prosecutions for violations of railroad safety laws and other activities of the bureau.

During the year under review, 1,072,504 freight cars, 23,870 passenger-train cars and 11,748 locomotives were in-



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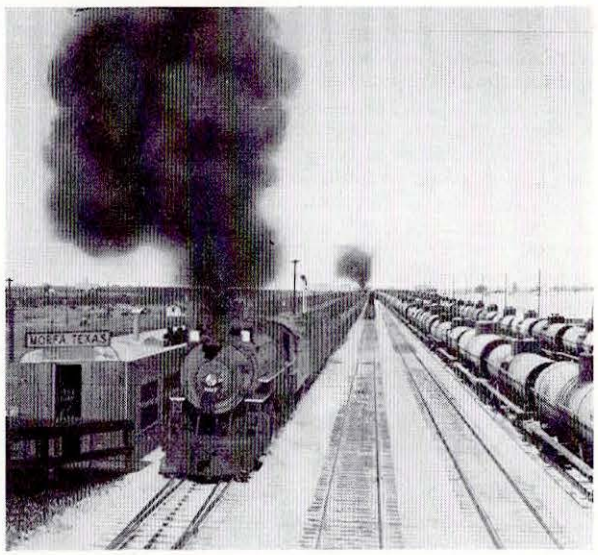

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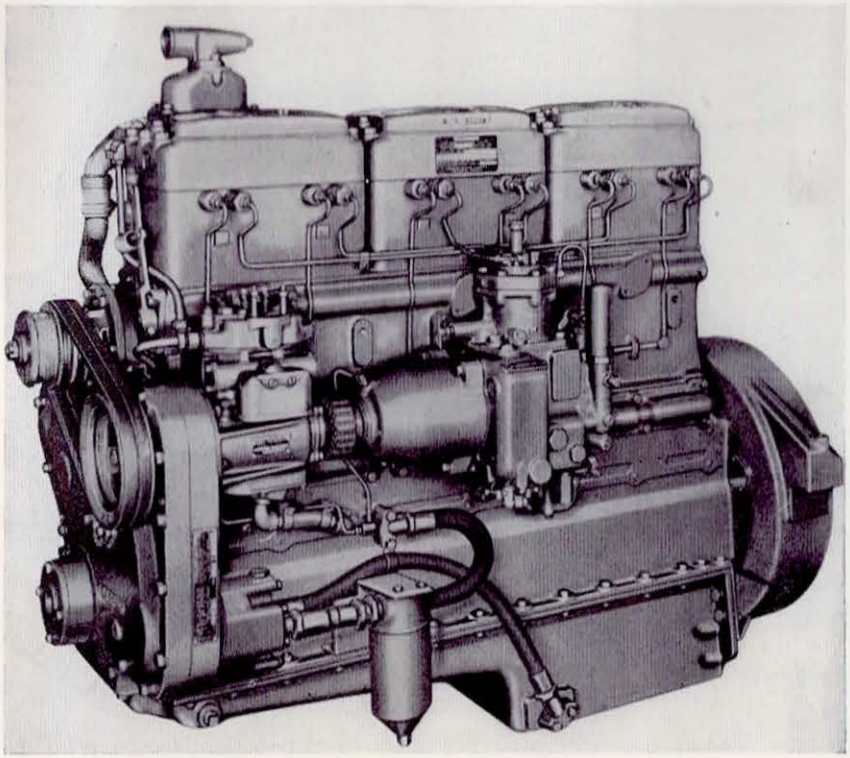
NEW AND IMPROVED PRODUCTS OF THE MANUFACTURERS



The HR-600 Diesel engine, developing a maximum of 165 hp. at 1,800 r.p.m., recently added to the line of Cummins Diesels

DIESEL ENGINE

An addition to the Cummins line of Diesel engines, based on the Model H, but developing 10 per cent more horsepower, was placed in production during September by Cummins Engine Company, Columbus, Ind. Designated as the HR-600 engine, this Diesel continues the trend toward more power per pound initiated in this line with the introduction of the H-600 model in 1932 and continued with the NH-600 engine four years ago.

The HR-600 engine develops up to 165 hp. at 1,800 r.p.m., with a 5⅛-in. bore and a 6-in. stroke. Piston displacement is 743 cu. in. It has a four-stroke cycle and the exclusive Cummins fuel system.

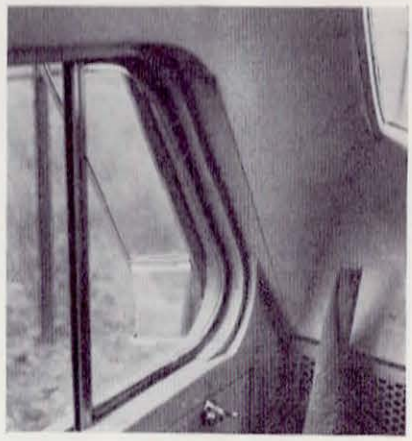
The HR-600 is available in an automotive model, HRB-600; three industrial models, HRBI-600, HRI-600, and HRP-600; and a marine model, HRM-600. Model HRBI-600 is the basic industrial model; Model HRI-600 is equipped with instrument panel and trunnion support base; and Model HRP-600 is an enclosed power unit with a structural-steel base, clutch power take-off, radiator, fan, engine hood and fuel tank.

Field conversion to HR-600 from H-600 ran be made by Cummins dealers. Steps involved include boring the present block and installing HR-600 pistons and liners and the optional installation of the new increased-flow lubricating system and continuous-groove bearings.

REAR-VIEW MIRROR

A combination rear-view mirror and windshield wing through which the engine crew can look back along the entire length of their train from a normal operating position without distraction from their job of operating the train has been introduced by the Prime Manufacturing Company, 1669 South First street, Milwaukee 4, Wis.

The rear-view mirror is built into the lower portion of the windshield wing and utilizes that area of the wing which is below eye level and, therefore, has no value for forward vision. The wing as well as the mirror can be finely adjusted, resulting in protected vision forward and clear vision backward, regardless of the sitting position of the engineer or fireman.



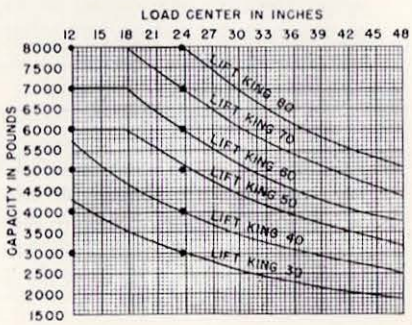
Installation of the rear view mirror

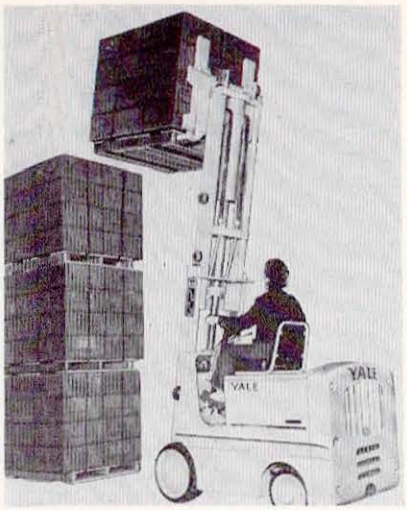
The wing is supplied mounted on a wood filler block for installation on any window. The mirror and wing can be furnished for the right or left side of the locomotive. It is applicable to road engines, transfer and switching locomotives, either steam or Diesel, and to cars and cabooses.

FLUID DRIVE FOR FORK TRUCKS

A gasoline-powered fork truck with fluid drive has just been announced by the Philadelphia Division of Yale & Towne, Philadelphia 15, Pa. Called the "Lift King," and powered by a 6-cylinder Chrysler industrial engine of 65 hp., this truck is manufactured in 6 models ranging, in 1,000-lb. steps, from 3,000 lb. capacity through 8,000 lb.

LOAD CAPACITY CHART





Controls are automobile type and arranged in the same manner.

Maximum lift for this truck is 130 in., with free lift of 66 in. Height of mast collapsed is 83 in. Load capacities for the various models at given distances from load center to the heel of the forks are shown in the accompanying chart.

Among the safety features incorporated in this truck are a safety steel fuel pump filter bowl, a Venturi exhaust type muffler with spark arresting feature and with the outlet at the rear of the truck, away from the operator, and a protectoseal gas cap.

TURBO-GENERATOR FOR TRAIN COMMUNICATION

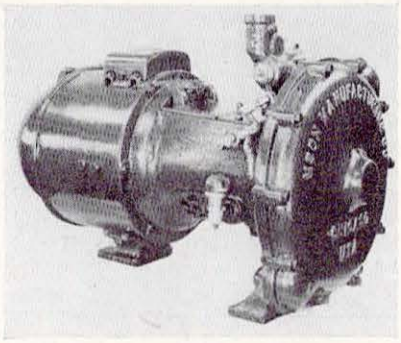
The Moon Manufacturing Company, 128 North Jefferson street, Chicago 6, has introduced a new model steam-turbo generator to supply power on steam locomotives for train communication, or on tugboats, or other floating equipment for ship-to-shore radio or radar. On a locomotive, the regular d.c. generator would be used for lights and train control.

The machine is of full ball bearing construction, using standard, high grade ball bearings throughout.

The generator, which is rated 1 kw., is self-excited with the alternating current collected from slip rings. The slip rings are made of very hard alloy bronze metal for long time service.

The speed of the turbine is 3,600 r.p.m. The casing is made of semi-steel castings, and the complete machine is built for rugged and dependable service.

The unit has been designed to provide fine voltage regulation to prolong tube life and to eliminate any output which would affect transmitting and receiving quality. It is 31⅜ in. by 17¼ in. high by 16 in. wide. It has automatic sight-feed oilers with list compensation and automatic overspeed cut-off valve.



Moon 1-kw., 110-volt, 60-cycle turbo-generator for supplying train communication power on steam locomotives

REFLECTIVE PAINT FOR CARS AND LOCOMOTIVES

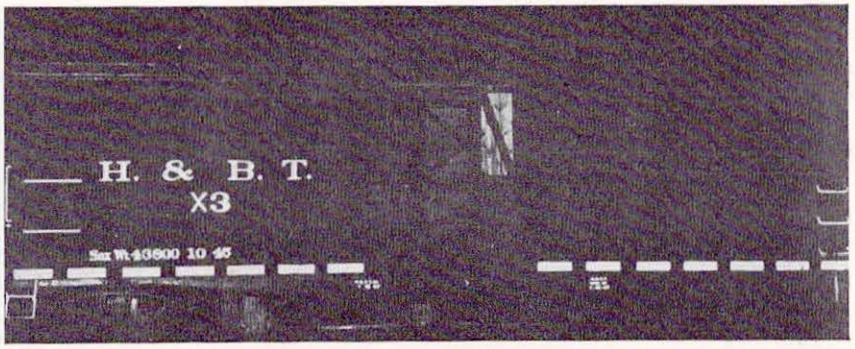
Prismo is a reflective process by which thousands of microscopic glass spheres are imbedded to approximately one-half of their diameters in a semi-plastic pigmented binder, so that the exposed portions refract and reflect light to its source. The process is applicable to railroad use for all markings and for hand and foot holds on either cars or locomotives.

The materials required consist of a Prismo railroad kit which includes a supply of binder, spheres and solvent for thinning, each in their proper proportion. This kit is all-purpose in nature and can be employed in making applications of these materials to freight car numbers, insignia on locomotives or rolling stock, and for such other railroad uses as yard signs, signal targets, speed strips and whistle signs. The equipment required is an air supply, an air sphere gun with cup and either a stencil brush for applying the binder or a tip to convert the air sphere gun into a binder spray gun. The use of the two spray guns, rather than the brush for the binder and the spray gun for the spheres, is recommended by the manufacturer, the Prismo Safety Corporation, Huntingdon, Pa.

The first operation is to prepare the car for stencilling. If the car is in good condition, the area to be marked should be cleaned, eliminating all dust, dirt, scale and foreign matter. If the car is in need of general repainting a complete job should be done prior to numbering. Guide lines are then laid out.

After the binder has been sprayed evenly, the spheres are imbedded in this semi-plastic binder which grasps the small "lenses" as they are sprayed on the wet markings. The completed job will air-dry hard overnight, and after eight hours the car or locomotive is ready for service.

Spraying the Prismo spheres onto the wet binder on car lettering



The appearance of a car to the markings and safety appliances of which the Prismo reflective process has been applied

GENERAL NEWS

Diesels Cut Coal Use 10 Million Tons in '48

25 million tons displaced since 1944, N.C.A. study shows

Diesel-electric locomotives installed by Class I railroads in 1948 displaced nearly 10 million tons of coal which would have been used as railroad fuel if coal-burning steam locomotives had performed the same proportion of the total freight, passenger, and yard service that they performed in 1947. This was shown by a recent study of the "impact of Diesel locomotives on railroad coal tonnage," made by the traffic department of the National Coal Association.

Comparing 1948 with 1944, the study showed that Diesel-electric installations of the past four years have resulted in displacement of nearly 25 million tons of fuel coal annually. The study's showing was summarized in the accompanying table. These figures were derived from calculations which divided each year's average coal consumption per service unit (gross ton-mile, passenger train car-mile, yard switching locomotive-hour) into the total of such service units lost by coal-burning steam locomotives.

Service Units Compared

Data as to service units performed by the various types of motive power were taken from compilations of the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. These showed that coal-burning steam locomotives handled 60.4 per cent of freight-service gross ton-miles during last year's first nine months, while Diesel-electrics handled 20 per cent. For the entire year 1947, the respective percentages were 67 and 12.4, while in 1944 they were 74.8 and 3.60.

In passenger service, coal-burning steam locomotives performed 36.4 per cent of the total car-miles during last year's first nine months, and Diesel-electrics performed 38.7 per cent. The respective (full-year) percentages for 1947 were 44.3 and 27.2, while in 1944 they were 60.6 and 8. Coal-burning steam locomotives performed 54.6 per cent of total yard switching locomotive-hours during the first nine months of last year, and Diesel-electrics performed 36 per cent. Respective 1947 percentages (full year) were 58.3 and 31.8, while in 1944 they were 67 and 21.3.

Commenting on the study and on the "very pronounced trend" toward the Diesel-electric in "all types of rail service," E. F. Estes, traffic manager of N.C.A., asserted that while available efficiency comparisons "indicate that the Diesel is a more efficient locomotive than the coal-burning steam locomotive," they do not include showings which compare the performances of a new Diesel and a new coal-burning steam locomotive on similar runs. Mr. Estes' further comment follows in part:

"No mention is ever made of the fact that the majority of the coal-burning locomotives now in service are antiquated, for example, over 30 years old; neither is the fact advertised that some of the modern coal-burning locomotives use only 40 lb. of coal as compared with the national average of 115 lb. of coal per 1,000 gross ton-miles of freight performance; nor is much publicity given to the fact that the Lima Locomotive Company (Lima-Hamilton Corporation) is building a new coal-burning locomotive that will operate to a 12 per cent efficiency, as compared with the average efficiency of 5 to 8 per cent for steam locomotives generally.

"The modern up-to-date coal-burning locomotive is doing a marvelous job, and proving that it is economical and efficient. This trend toward Diesels is not all a bed of roses as some would claim.

"Why Kill the Goose?"

"For some reason or other, the railroads have been most reluctant to make public any facts to show the economy or conservation brought about by the increased use of Diesel locomotives, although the general claim is frequently made that the Diesel-electric engine is the more economical. Regardless of such economies as might be made by the increased use of Diesel locomotives, which have not been proven, or at least not made public, the fact remains that the larger tonnage of coal thus displaced by these locomotives the more the coal producer will be pressed to keep his present employees on the payroll and his mine output maintained at a normal level; and it must be borne in mind that coal is the largest single revenue-producing commodity or class of freight that the railroads handle. We repeat our question to the railroads, 'Why kill the goose that lays the golden egg?'"

Coal Consumption Displaced by Increased Use of Diesels for Various Types of Service on Class I Roads

(Net Tons)

	Total	Freight Service	Passenger Service	Yard Switching Service
1948 compared with 1947	9,705,521	5,860,810	2,872,320	972,391
1948 compared with 1946	15,102,809	8,080,848	5,707,920	1,314,041
1948 compared with 1945	19,717,492	9,501,643	8,034,540	2,181,309
1948 compared with 1944	24,843,599	12,787,277	8,797,500	3,258,822

Johnson May Stop Effort To Get More Car Steel

Warns A.A.R. orders do not justify increased allocation

Col. J. Monroe Johnson, director of the Office of Defense Transportation, this week was quoted as having warned the Association of American Railroads that he will stop his efforts to obtain allocation of additional steel for new freight cars unless the railroads increase their orders for such cars.

This warning to the A.A.R., it is understood, also was presented to the National Security Resources Board. The O.D.T. director—who has said that Class I roads need two million freight cars—was quoted as calling attention to the fact that new car orders have been declining for several months and totaled only 563 in January. [As reported elsewhere in this issue, cars on order February 1 numbered 96,214, as compared with 119,711 on February 1, 1948. Increased costs of new cars, combined with the recent drop in car loadings, are generally understood to account for the drop in orders.]

Col. Johnson is further reported to have said that the Office of Industry Cooperation of the Department of Commerce, which supervises the voluntary steel allocation program, "perhaps will agree" at its next steel meeting to allow an increased amount of steel

for new cars and repairs to old cars. He added, however, that the O.D.T. is finding it difficult to allocate steel on the 10,000-car level; that it cannot allocate on that level beyond next May without additional orders; and that with the present number of cars on order it would be unable to allocate increased allotments. He is said to have stated further that he would unhesitatingly refuse the additional steel and unequivocally state his reasons if the railroads continue to refuse to buy cars.

Col. Johnson also referred to the fact that some car orders had been cancelled; and to the railroads' contention that their need for new equipment was an important justification for freight-rate increases. He is also reported to have expressed the belief that the drop in car loadings is only temporary; that the situation will again become acute as soon as weather in the West returns to normal, and that severe future car shortages could be anticipated.

Col. Johnson's efforts to obtain additional steel for freight cars have been reported in detail in earlier issues of *Railway Age*.

Senate Group O. K.'s Johnson for I. C. C.

Negroes fail to get delay for assurances on non-segregation

The Senate committee on interstate and foreign commerce this week rejected contentions of the National Negro Council that the committee's approval of Colonel J. Monroe Johnson's reappointment for a new seven-year term as a member of the Interstate Commerce Commission should be held up until assurances were given that the commission would do something about what the council alleges to be discrimination against Negro passengers on the railroads. The committee voted unanimously on February 9 to report the nomination favorably to the Senate, the vote coming in an executive session which followed a public hearing where Colonel Johnson answered a series of questions which had been submitted to the committee's chairman—Senator Johnson, Democrat of Colorado—by the Negro council's director, Edgar G. Brown, who also made an oral presentation.

Colonel Johnson's reappointment to the commission is for a term ending December 31, 1955. President Truman submitted the nomination to the Senate last month, the colonel's previous term having expired December 31, 1948. Since that time he has continued to serve under that provision of the Interstate Commerce Act which stipulates that a commissioner whose term has expired shall continue to serve until his successor qualifies. In asking that the committee's approval of the nomination be held up, Director Brown of the Negro council expressed to the committee his feeling that President Truman's "civil rights" program could be "initiated" in no better way. Mr. Brown also asserted that, if the railroads would treat Negroes "properly," they could eliminate the "deficits" from their passenger operations.

Questions from committee members drew from Colonel Johnson replies which pointed up the fact that segregation of white and Negro passengers by the railroads is required by state laws; and that requirements of the Interstate Commerce Act are met if accomodations are equal. While they had the colonel before them, the senators took advantage of the opportunity to ask various general questions about the railroad situation and the commission, some of the questions indicating views to the effect that the railroads should move faster in adopting new operating methods and that the commission should be more disposed than it has been to take the initiative in seeking a solution of transportation problems.

Advocates Federal Department

The colonel, on his part, seized the opportunity to advocate, as he had in previous appearances before Congressional committees, the creation of a federal department of transportation headed by a member of the President's cabinet. That, he said, is the "only answer," and he went on to assert that the country will not have a sound transportation set-up until transportation is "put at the cabinet table." Later on, Colonel Johnson predicted that the department of transportation "will come some day."

Meanwhile, the colonel had answered the questions submitted to the committee chairman by Director Brown of the Negro council. There were 10 of them, asking such things as whether or not the colonel were a registered Democratic voter in his home state of South Carolina, and whether he has had "any part in this state's denial of the right to vote and participation of Negroes in the Democratic, so-called 'white' primary." The I.C.C. commissioner gave an affirmative answer to the first question and a negative answer to the second. In response to another question, he said he had not been connected in any way with the "Dixiecrats."

The other questions asked in various ways what the commission, and the colonel as a member of it, had done to eliminate "discriminatory" practices against Negro passengers on the railroads. The colonel replied that the commission, in all cases involving segregation, has "applied the law as to whether or not equal accommodations were provided." He agreed with Senator Capehart, Republican of Indiana, when the senator suggested that, if equal facilities are provided, the commission has no power to prohibit discrimination; and that, if the railroads refused to segregate white and Negro passengers, they would be subject to penalties under state laws.

Anti-Discrimination Law

Senator Magnuson, Democrat of Washington, said that he was sponsoring a bill to prohibit discrimination by federal law; and he asked Colonel Johnson if such legislation would be helpful. The colonel said he believed it would, and he assured Senator Magnuson that the commission would comply fully with any federal law on the subject. Mr. Magnuson also asked why the commission could not now issue a "blanket" order prohibiting discrimination against Negroes instead of dealing with the matter piecemeal when complaints are filed. Colonel Johnson conceded that a blanket order could be issued, but he admitted that he had done nothing personnally to initiate a general commission investigation of the matter. In the latter connection, the colonel went on to explain that he has been relieved of much commission work since he has been serving as director of the Office of Defense Transportation; and that prior to that time his work on the commission was concerned with railroad freight operations.

After completing his replies to the Negro council's questions, Colonel Johnson stated for the record his attitude toward Negroes. He said that half of the population of his home town of Marion, S. C. was Negro, and that his boyhood playmates were Negroes. He added that his friendship with those former playmates has continued through the years, and when he now goes home to Marion he has "more pleasant handshakes" from Negroes than he does from white people. The office of his engineering firm, he also said, employs more Negroes than it does white people. "I have no prejudice," he concluded.

In his oral presentation, Director Brown of the Negro council said he had with him a Negro woman who had just arrived by bus from Atlanta, Ga. Among other experiences, he said, the woman had been forced to move to the rear of the bus where the "equal accommodations" were a hard wooden seat. Mr. Brown also complained because, he said, the I.C.C. does not have a Negro in "any policy making job." He stated that he was not making a personal attack on Colonel Johnson—Except for his "sins of omission" as a member of the commission. "There is no practice of the golden rule at the I.C.C.," Mr. Brown also asserted. "Equal accommodations are not provided."

Meanwhile, Colonel Johnson had answered the committee members' questions which were unrelated to the segregation matter. He told Senator Magnuson that there would be no proposal to extend the life of O.D.T. beyond June 30. The colonel explained that

the plan to transfer necessary activities to the I.C.C. at that time will be carried out.

Senator Tobey, Republican of New Hampshire, said he had heard it charged that the I.C.C. is at the "lowest point" in efficiency that it has ever reached. Colonel Johnson replied that, in his opinion the commission now has "more talent" than it ever had. Mr. Toby then asked if railroad management were inefficient; and the colonel said he thought management was very efficient. Senator Reed, Republican of Kansas, said he has been surprised that the commission does not defend itself against charges that it has been unduly generous in granting rate increases to the railroads. The senator pointed out that increases made in World War I and in that postwar period greatly exceeded those of recent years. Colonel Johnson noted that the commission is a quasi-judicial body which "seldom enters public controversies."

The colonel gave a negative reply to a question from Senator McFarland, Democrat of Arizona, who asked if the railroads were failing to keep abreast of the times. Whereupon Senator Tobey asked why the railroads could not be made to use "modern" signaling systems. The senator seemed to have radio, radar, etc., in mind; to him the use of a flagman seems archaic." Colonel Johnson explained that the flagman has an important assignment to protect trains; and he doesn't think the job is going to be eliminated.

Senator Tobey then asked Colonel Johnson, as a "practical railroad man," if there were not some "weakness" in the present signaling set-up. The chairman disclaimed any disposition to pose as an "expert," but he said it does seem to him that the railroads could move faster in adopting safety devices. As to the unions' demand for another man on Diesel-electric locomotives, the colonel told Senator Capehart that this is "still in the advertisement stage."

Railroads Want To Stay Exempt from Hours Act

Oppose proposal to fix statutory 40-hour week for their employees

Proposed legislation to extend the maximum-hours (40-hr. week) provisions of the Fair Labor Standards Act to all railroad employees except those in line-haul train service is opposed by the railroads. The opposition was expressed by Gregory S. Prince, assistant general solicitor of the Association of American Railroads, at February 5 hearings before the House committee on education and labor on the proposal embodied in H.R.2033, introduced by that committee's chairman—Representative Lesinski, Democrat of Michigan. A similar bill, S.653, has been introduced in the Senate by Senator Thomas, Democrat of Utah, who is chairman of that body's committee on labor and public welfare.

All railroad employees are now exempt from the act's maximum-hours provisions, although its minimum-wage provisions apply to them. The removal of the exemption as to all employees other than those in line-haul train service was recommended recently by Administrator W. R. McComb of the Department of Labor's Wage and Hour and Public Contracts divisions, in his annual report for the 1948 fiscal year. Mr. McComb also recommended extension of the maximum-hours provisions to additional employees of motor carriers and other agencies of transport, and provisions to that end are included in the Lesinski and Thomas bills.

Effect of the Proposals

The effect of the Lesinski bill's proposal as to railroad employes, Mr. Prince said, would be to apply the 40-hour-week to the non-operating employees, numbering approximately 1,000,000, and to a "substantial proportion" of the 300,000 operating employees. He went on to express the railroad industry's view that "this method of establishment of a standard work week for railroad employees is unnecessary and impracticable and will result in much confusion."

The present exemption was favored by labor organizations representing railroad employees, as well as by management, when the act was passed in 1938, Mr. Prince recalled. "No effort," he added, "has ever been made by the railroad labor organizations so far as we know to bring railroad employees under the maximum-hours provisions of the Fair Labor Standards Act." He also called attention to the present negotiations for settlement of the labor-management dispute out of which came the emergency-board report of December 17, 1948, which recommends a 40-hour week for non-operating employees, effective September 1, 1949. In making their 40-hour-week demand, Mr. Prince pointed out, the "non-ops" resorted "not to Congress but to collective bargaining under the Railway Labor Act."

Labor Conditions Different Today

The A.A.R. attorney went on to stress the "complexities" of the situation wherein changes in working rules must be made to bring them into line with the shorter work week. Legislation like that proposed in the Lesinski bill, he added, would affect only "one phase of an integrated (emergency board) report recommending a settlement of the entire existing dispute," and would "serve only to confuse the situation and to interfere with the orderly settlement of this dispute pursuant to the Railway Labor Act."

Meanwhile, Mr. Prince had said that present economic conditions, which include a "tight labor market," were entirely different from those prevailing in 1938 when the Fair Labor Standards Act was passed. Then, he added, there was a "tremendous labor surplus," and the impact of the 40-hour week on industries affected was "practically negligible." He also pointed out that manufacturing concerns had the alternative of establishing a 40-hour week to avoid overtime payments; but the railroads "are a continuous service industry and are obliged to continue their operations." In the latter connection, Mr. Prince went on to explain that employees in line-haul train service are not the only railroaders who must be on the job to maintain continuous operations. Thus, he said, the carriers would have to set up a staggered work week and recruit additional employees. "In a tight labor market such as we now have," Mr. Prince added, "this is not easy of accomplishment because finding the men and giving them the necessary training will take time."

The A.A.R. attorney also addressed himself briefly to a provision of the bill which would amend the act's definition of the term "wage" so as to exclude the cost of furnishing board, lodging and other facilities to seamen and to employees engaged on a common carrier in preparation and service of food and beverages. The amended definition would still permit the "wage" figure for other employees to include the reasonable cost of providing board and lodging. The proposed amendment was opposed by Mr. Prince who asserted that it would set up an "unjustifiable discrimination." He could not see "how with respect to the matter of furnishing meals it can make the slightest difference whether the employee is employed on a common carrier or in a factory or elsewhere."

Fiscal 1948 Reviewed By Bureau of Safety

Makes usual report on inspection of equipment and other activities

The annual report of Director S. N. Mills of the Interstate Commerce Commission's Bureau of Safety for the fiscal year ended June 30, 1948, sets forth in the usual form the results of inspection of safety-appliance equipment on railroads together with information on hours-of-service of railroad employees, installation and inspection of signal systems, interlocking and automatic train-stop and train-control devices, investigation of accidents, prosecutions for violations of railroad safety laws and other activities of the bureau.

During the year under review, 1,072,504 freight cars, 23,870 passenger-train cars and 11,748 locomotives were in-

spected, as compared with 1,061,699 freight cars, 24,767 passenger-train cars and 12,795 locomotives in fiscal 1947. Of the 1948 total, 3.69 per cent of the freight cars, 4.13 per cent of the passenger-train cars and 4.66 per cent of the locomotives were found to be defective, as compared to the respective 1947 figures of 3.4 per cent, 3.71 per cent and 5.3 per cent.

Air brakes tested on 2,637 trains (consisting of 113,085 cars) prepared for departure from terminals were found operative on 112,958 cars, or 99.9 per cent. This percentage was attained, however, after 2,211 cars having defective brakes had been set out and repairs had been made to brakes on 1,623 cars remaining in the trains. Similar tests on 1,444 trains arriving at terminals with 77,817 cars showed that air brakes were operative on 97.5 per cent of the cars and that an average of approximately 1.3 cars per train was not controlled by power brakes.

According to the report, 696 reporting railroads and private car lines, which collectively own 2,163,051 freight cars, have equipped 1,673,353 such cars with power brakes of specifications complying with those set out in the commission's September 21, 1945, order. That order, as amended, provides that cars used in interchange service must all be equipped with the required brakes by January 1, 1950, and all other cars used in freight service must be so equipped by January 1, 1952. The figures show that 80 per cent of the railroad-owned cars, but only 58.9 of the cars owned by private car lines, were equipped as of June 30, 1948.

"Tests of geared hand brakes conducted by the Association of American Railroads during the fiscal year resulted in certification of one vertical-wheel and one horizontal-wheel brake," the report stated. "Up to June 30, 1948, 13 vertical-wheel geared brakes and 7 horizontal-wheel geared brakes had been certified by that association. Experimental road-service tests similar to the tests heretofore made of the experimental AB brake cars were conducted of the load-compensating brake on the Pennsylvania during the months of July and August, 1948."

Hours of Service

During the fiscal year 1948, 196 of the 677 railroads filing hours-of-service reports reported a total of 28,422 instances of all classes of excess service, a decrease of 5,388 as compared with the previous year. The fiscal 1948 figure included 5,683 instances of excess service by train-service employees subject to the 16-hour provision of the law, and 22,739 instances of excess service by operators and other employees subject to the 9-hour and 13-hour provisions of the law.

Landslides, high water, fire and adverse weather conditions, wrecking and relief service and collisions and derailments were the principal reasons for 5,107 instances (as compared to 4,325 instances in 1947 and 5,252 in 1946) which caused train-service employees to remain on duty longer than 16 consecutive hours during 1948. Sickness, death and personal injury accounted for 18,275 of the 22,739 instances of excess service by operators and dispatchers. The latter figure compares to 29,062 instances reported for fiscal 1947.

During the year, 180 cases of violation of safety-appliance laws, comprising 724 counts; 18 cases of violation of the hours-of-service law, comprising 46 counts; seven cases of violation of section 25 of the Interstate Commerce Act, comprising 13 counts; and one case of violation of the accident reports law, comprising three counts, were transmitted to United States attorneys for prosecution.

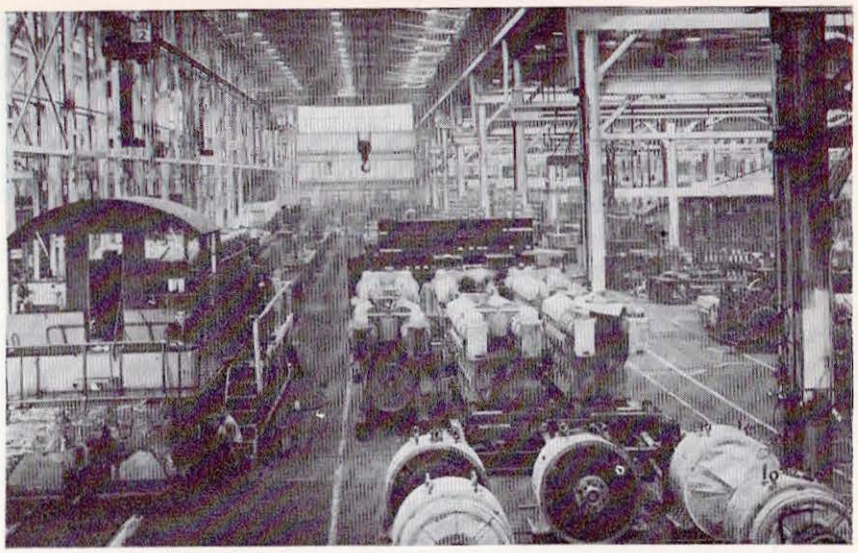
Signals and Radio

As of January 1, 1948, there were 165,457.5 miles of road (138,391.3 miles of track) equipped with block-signal systems, including automatic block signals on 73,703.5 miles of road (105,334.8 miles of track). On the same date, there were 4,503 interlockings in operation, and 10,665.9 miles of road (20,747 miles of track) equipped with automatic train-stop, train-control and cab-signal devices.

"As of June 30, 1948, there were 15 communication systems in service on line of road of 13 different railroads providing wayside-to-train, end-to-end, or train-to-train communication," the report continued. Fifty-two installations providing communication between fixed stations and switching engines in yards and terminals were in service on 29 railroads." Seven railroads have radio installations in service in connection with operation of tugboats.

Of the 52 collisions investigated by the bureau in fiscal 1948, 29 occurred on lines operated by the block system, 13 on lines operated by the timetable and train-order system, and 10 in locations where yard and miscellaneous operating rules were in effect. The collisions resulted in the deaths of 76 persons and injuries to 701. The bureau also investigated 28 derailments which resulted in the deaths of 30 and injuries to 923. In 12 accident reports, the bureau recommends establishment of "adequate block systems."

During the calendar year 1947 there were 4,015 accidents at highway grade crossings, which resulted in the death of 1,790 persons and injury of 4,251. There were 61 derailments of trains from collisions with automobiles, resulting in the death of 18 persons and injury of 59. Of the total casualties from derailments and other train accidents at highway grade crossings, 15 persons killed and 110 injured were railroad passengers, employees, and persons carried under contract.



PRODUCTION OF DIESEL SWITCHERS BEGUN AT ELECTRO-MOTIVE'S NEWEST PLANT.—Diesel switchers of 600 and 1,000 hp. are now being built at the rate of one each working day at the new Cleveland (Ohio) plant of the Electro-Motive Division, General Motors Corporation. The new facility, as noted in *Railway Age* of June 26, 1948, is devoted exclusively to manufacture of switching locomotives; 31 had been completed as of February 2, and production is expected to be increased by mid-year to two switchers every working day. Some 600 persons are employed at the plant, which operates two 8-hr. shifts five days a week. Purchased last year from the government, the layout affords 265,000 sq. ft. for switcher production and 174,000 sq. ft. for G. M.'s Cleveland Diesel Engine Division. Approximately three miles of railroad track are located on the plant property. Other plants are maintained by Electro-Motive at La Grange, Ill., and Chicago

Diesel Engineer Case Before Emergency Board

Hearing stirs up brotherhood jurisdictional wrangle

A three-man emergency board convened at Chicago on February 8, to investigate the dispute between the carriers and the Brotherhood of Locomotive Engineers arising from that union's demand for employment of an additional engineman on all multiple-unit Diesel-electric locomotives—or on single units weighing over 100 tons—used in road, transfer or belt-line service. Creation of the board by President Truman on January 28 (reported in *Railway Age* of February 5) forestalled a strike set for January 31 on 15 Western railroads. The engineers' demands have been served on a total of 69 principal carriers.

Simultaneously, the emergency board which reported December 17 on the 40-hr. week and pay increase demands of the 16 non-operating brotherhoods reconvened at Chicago to render assistance to the carriers and brotherhoods in the interpretation of its earlier recommendations, and the consummation of a settlement.

Opening Statements

Howard Neitzert, counsel for the carriers in the engineer's Diesel case, told the board that "there is no work for an additional man to do on a Diesel locomotive . . . Diesel operations are conducted efficiently and safely with present crews, and creation of another job for an unneeded man on these locomotives would be the most indefensible of featherbedding." Mr. Neitzert labelled the request of the engineers as an "inter-union fight" between the B. of L. E. and the Brotherhood of Locomotive Firemen & Enginemen, and quoted from a circular of the former organization dated November 24, 1948, in which it was stated that both organizations agreed that an additional engineman should be in the cabs of Diesel locomotives, "but each organization insists that the additional engineman be chosen from its ranks." Carriers' counsel introduced evidence to show that the shop crafts also are involved in the dispute, quoting from a recent letter by Fred N. Aten, president of the Railway Employees' Department, American Federation of Labor, to Alvanley Johnston, grand chief engineer, B. of L. E., in which he expresses the fear that "Possibly you [the B. of L. E.] do intend to claim jurisdiction over the running repair work that is done by shop mechanics riding Diesel locomotives." Carriers' counsel suggested that the board might wish to consider "protecting the employees of the railroads from the inevitable effect of wasteful and extravagant demands asserted for short-sighted and selfish reasons," and denounced featherbedding as the spawn of inter-union rivalry, foreign to the best interest of the employees, the carriers, and the general public.

C. D. O'Brien, counsel for the union, outlined the organization's demand which would require the carriers to employ second enginemen on each Diesel-electric locomotive in all circumstances where "attention to the engine room machinery is required" which cannot be rendered by the man operating the locomotive; this second engineman to be governed generally by the same rules, rates and working conditions applicable to the first. The second engineman's duties, Mr. O'Brien continued, would be confined to supervision over the locomotive engines and appliances; he would be required to perform only adjustments and repairs necessary on the road. The union's counsel contended that the so-called 1943 Diesel agreements, which provide that if an additional man is to be assigned to a Diesel he shall be drawn from the firemen's ranks, neither guides nor sets precedent in the case, stating that the former agreements were illogical, contrary to fact, contradictory, and failed to dispose of the problems in the case.

Mr. O'Brien denied that the engineers' demands could be considered a jurisdictional dispute. He stated that the duties of maintaining locomotives stem from "historical, carrier-imposed responsibilities" of the enginemen, and said that if the B. of L. F. & E. wished to seek employment of a second fireman on Diesel locomotives to perform fireman duties, the engineers had no objections.

B. of L. F. & E. Seeks to Intervene

Harold C. Heiss, general counsel for the Brotherhood of Locomotive Firemen & Enginemen, asked the board for permission to intervene in the proceedings and present data and contractual information pertinent to the case. Counsel for the engineers objected strenuously on the ground that the firemen are not a party to the dispute and that their interest is supported by the position of the carriers since they are using the 1943 Diesel agreements in their defense. [The B. of L. F. & E. presented demands for an additional fireman on multiple-unit Diesel locomotives on June 30, 1947. Their case was heard by the National Mediation Board beginning January 18, 1949, and the board recently closed the case upon refusal of the carriers to submit to arbitration.] In defending their intervention, the firemen's counsel pointed out that a recommendation by the emergency board supporting the engineers' demands would endanger the firemen's contract; a recommendation against the engineers on the question of a second man on Diesels would be cited as precedent in the future handling of the pending demands of the firemen.

The board considered that the firemen's presentation would be amplification rather than intervention, and ruled that the firemen might make their presentation only if it appeared essential after both parties had completed testimony.

Membership of the Board

Chairman of the presidential fact-finding board is George William Taylor, research associate in the Industrial Research department, and professor of labor relations of the Wharton School, University of Pennsylvania. Mr. Taylor has served in labor disputes in the hosiery and automotive industries; as chairman of the Regional Labor Relations Board at Philadelphia, Pa.; vice-chairman of the National War Labor Board; secretary, President's 1945 labor-management conference, and chairman, advisory committee, Office of War Mobilization and Reconversion.

Board member Grady Lewis, a Washington (D.C.) lawyer, has served as neutral referee on the first and third divisions of the National Railroad Adjustment Board and on the Railway Express Board of Adjustment. He was neutral arbitrator in a number of recent railroad and airline disputes and served as a member of emergency boards in strike-threat cases on six different Class I railroads, a number of short lines, and two air lines.

Member George E. Osborne is professor of law at Stanford University, California. Mr. Osborne served as a public member of industry committees Nos. 9 and 44 for the railroad carriers under the Fair Labor Standards Act in 1940 and 1942.

1948's Net Income Totaled $711 Million

Net railway operating income for year was $1,002,352,323

Class I railroads in 1948 had an estimated net income, after interest and rentals, of $711,000,000, as compared with $498,000,000 in 1947, according to the Bureau of Railway Economics of the Association of American Railroads. Last year's net railway operating income, before interest and rentals, was $1,002,352,323, a return of 4.38 per cent, as compared with 1947's $780,438,283, a return of 3.46 per cent.

Meanwhile, 22 Class I roads failed to earn interest and rentals in 1948, of which nine were in the Eastern district, four in the Southern region, and nine in the Western district. The 1948 gross was $9,671,576,262, an increase of 11.3 per cent above the 1947 gross of $8,686,644,111. Operating expenses, at $7,471,554,087, were up 9.9 per cent from the 1947 total of $6,798,970,739.

Estimated results for December, 1948, showed a net income of $58,000,000, as

GOVERNOR OF INDIANA URGES HIGHER TRUCK FEES

Blasts against "almost criminal disregard for the carrying capacity of most of our pavements," and recommendations for a revision of truck tax laws were among the points made by Gov. Henry F. Schricker, Democrat, of Indiana, in his message to the 86th General Assembly. He said, in part:

"The maintenance of our expensive highway system, coupled with the insistent demand for further extensions and the replacement of hazardous bridges, creates a problem of the first magnitude for our highway department. The same situation also applies to the maintenance and repair of city streets and county highways. All are in financial distress largely owing to the fact that present revenues, though higher than in prewar periods, are no match for the fantastic and inflationary costs of current highway construction.

"The demands of the war and the almost criminal disregard for the carrying capacity of most of our pavements have conspired to bring serious damage, if not complete destruction, to many sections of our highway system. It is high time to call a halt on these violations. I, therefore, recommend a revision of our truck tax laws at this session and the adoption of a schedule of fees that will be in line with higher rates throughout the country."

compared with $76,000,000 for December, 1947, while the net railway operating income for the 1948 month was $64,661,939, as compared with $76,669,093 for December, 1947. The December, 1948, gross was $806,553,949, compared with $804,316,810 for December, 1947; operating expenses totaled $648,741,565, compared with $631,369,661.

Class I roads in the Eastern district (including the Pocahontas region) in 1948 had an estimated net income of $267,000,000 compared with $167,000,000 in 1947. Those same roads in 1948 had a net railway operating income of $429,878,360 compared with $304,426,167 in 1947. Gross in the Eastern district in 1948 totaled $4,407,855,047, an increase of 11.4 per cent compared with 1947, while operating expenses totaled $3,485,336,039, an increase of 8.9 per cent.

Class I roads in the Southern Region in 1948 had an estimated net income of $99,000,000 compared with $63,000,000 in 1947. Those same roads in 1948 had a net railway operating income of $138,971,107 compared with $103,771,466 in 1947. Gross in the Southern region in 1948 totaled $1,317,818,471, an increase of 10.3 per cent compared with 1947, while operating expenses totaled $1,025,570,648, an increase of 8 per cent.

Class I roads in the Western district in 1948 had an estimated net income of $345,000,000 compared with $268,000,000 in 1947. Those same roads in 1948 had a net railway operating income of $433,502,856 compared with $372,240,650 in 1947. Gross in the Western district in 1948 totaled $3,945,902,744, an increase of 11.6 per cent compared with 1947, while operating expenses totaled $2,960,647,400, an increase of 11.7 per cent.

CLASS I RAILROADS — UNITED STATES

	1948	1947
Month of December		
Total operating revenues	$ 806,553,949	$ 804,316,810
Total operating expenses	648,741,565	631,369,661
Operating ratio per cent	80.43	78.50
Taxes	81,604,936	80,852,694
Net railway operating income (Earnings before charges)	64,661,939	76,669,093
Net income, after charges (estimated)	58,000,000	76,000,000
Twelve Months Ended December 31, 1948		
Total operating revenues	$9,671,576,262	$8,686,644,111
Total operating expenses	7,471,554,087	6,798,970,739
Operating ratio per cent	77.25	78.27
Taxes	1,028,530,531	936,529,356
Net railway operating income (Earnings before charges)	1,002,352,323	780,438,283
Net income, after charges (estimated)	711,000,000	498,000,000

K.C.S. Quits Air Business

The Kansas City Southern, which established an air transport subsidiary in 1939, is closing out this venture, according to President W. N. Deramus, because under present conditions it is clear that surface carriers will not be authorized to provide anything but irregular cargo service, a status which is not satisfactory to the railroad. The railroad's subsidiary has been operating four DC-3s in contract freight service for a wide variety of items over irregular routes extending as far east as New York.

Hearings on Western and Southern Traffic Agreements

The Interstate Commerce Commission has set back from February 28 until April 6 the hearing on the application of carrier members of the Western Traffic Association for approval of their proposed rate-procedures agreement. The hearing will be held at Washington, D. C., before the commission's Division 2, consisting of Commissioners Alldredge and Rogers.

Meanwhile, the commission has assigned for hearing at Montgomery, Ala., on March 28, before Commissioner Alldredge the application of southern railroads for approval of a similar agreement to be carried out through the Southern Freight Association, Southern Classification Committee, and Southern Passenger Association.

The applications were filed under the Interstate Commerce Act's section 5a, added last year by the Bulwinkle-Reed Act. The proposal of the western roads is docketed as Section 5a Application No. 2, while the southern roads' proposal is Section 5a Application No. 6. The Brotherhood of Locomotive Engineers has asked the commission for leave to intervene in the former proceeding. Its petition indicated a plan to support the application.

Would Provide R.F.C. Financing for Air Lines

Loans or guarantees from the Reconstruction Finance Corporation in the amount of about $250 million to refinance the air lines were suggested by a member of the Civil Aeronautics Board, Harold A. Jones, in a February 2 address before the Third Annual Air Transport Institute of the American University, Washington, D. C. Mr. Jones said the views he expressed were "entirely my own."

He first outlined the financial plight of regularly scheduled, certificated air lines, noting that proportion of debt to total capitalization had risen from 7.6 per cent in 1940 to approximately 50 per cent as of January 1, 1948. "On top of this heavy burden of funded debt,'" Mr. Jones continued, "are three years of heavy losses. In 1946, the domestic air lines lost over $5,500,000; in 1947, they lost over $20,000,000; and in 1948, they will lose an estimated $8,000,000 or more. Consequently all the surpluses and reserves of many important air lines have been wiped out. Free working capital has become almost non-existent and resort has been made to short-term borrowing and cash received from advance sales."

Mr. Jones is confident the air lines will eventually "establish a record of regular earnings which will permit equity financing at a reasonable cost." Thus he called his proposal for R.F.C. loans and guarantees an "interim plan." The "short term" phase of the plan would contemplate emergency R.F.C. loans to the air lines for working capital and equipment; and Mr. Jones expressed his view that the R.F.C. has authority to make such loans, provided they are approved by C.A.B., and there is "reasonable assurance" of payments of interest and repayment of the loans. The "present mail policy" of C.A.B., Mr. Jones continued, "should give reasonable assurance" that the borrowing air lines would be provided with the necessary funds to service the loans. Mr. Jones had previously said that, in his opinion, the Civil Aeronautics Act "requires that the board allow mail pay to an honestly and efficiently managed air line sufficient to permit it to break even, and, in addition, to earn a fair return. . .so long as the air line. . .maintains and continues the development of its system to the extent necessary to furnish an honest utility service. . .at reasonable charges without unjust discrimination, performs the postal service required of it, and keeps itself ready to aid in the national defense."

As to the "long-term" phases of his

York, Chicago & St. Louis on January 26 was reported in the *Railway Age* of January 29, was also elected to succeed the late John W. Davin as chairman of the board of the Wheeling & Lake Erie at a special meeting of the directors of that company on February 8.

New Securities

Applications have been filed with the Interstate Commerce Commission by:

Chicago, Indianapolis & Louisville.—To assume liability for $4,500,000 of equipment trust certificates to finance in part the acquisition of equipment delivered in 1946 and 1947 and now used under conditional sales agreements, and the following new equipment:

	Description and builder	Estimated Unit Cost
3	1,500-hp. Diesel-electric switching locomotives (Electro-Motive Division, General Motors Corporation)	$153,558
2	600-hp. Diesel-electric switching locomotives (Electro-Motive)	83,554
30	50-ton box cars (Pullman-Standard Car Manufacturing Company)	4,955
15	single-deck stock cars (Monon shops)	4,540

The equipment delivered in 1946 and 1947, which would be brought under the trust agreement, consists of 599 freight cars, 12 Diesel-electric locomotives, and 28 passenger-train cars. The certificates would be dated March 1 and would mature in 15 annual installments of $300,000 each, beginning March 1, 1950. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

Delaware & Hudson.—To assume liability for $4,800,000 of equipment trust certificates to finance in part the acquisition of 29 Diesel-electric locomotives and 600 freight cars as follows:

	Description and builder	Estimated Unit Cost
10	1,000-hp. Diesel-electric switching locomotives (American Locomotive Company)	$105,163
2	1,500-hp. Diesel-electric road switching locomotives (American)	144,861
5	1,000-hp. Diesel-electric switching locomotives (American)	106,179
7	1,500-hp. Diesel-electric road switching locomotives (American)	153,522
5	1,500-hp. Diesel-electric road switching locomotives (American)	145,039
100	covered hopper cars (Greenville Steel Car Company)	6,037
300	box cars (D. & H. shops)	4,761
200	gondola cars (D. & H. shops)	3,944

The application put the estimated total cost of the equipment at $6,492,925. The certificates would be dated March 1, and would mature in 20 semi-annual installments of $240,000 each, beginning September 1. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

Denver & Rio Grande Western.—To assume liability for $6,900,000 of series N equipment trust certificates to finance in part the acquisition of seven Diesel-electric locomotives and 775 freight cars at an estimated total cost of $9,203,860. The Diesels will be 6,000-hp. freight locomotives purchased from the Electro-Motive Division, General Motors Corporation, at an estimated cost of $658,959 apiece; each will consist of two 1,500-hp. lead units and two 1,500-hp. booster units. The 775 freight cars will include 500 50-ton, drop-bottom gondola cars purchased from the Pressed Steel Car Company at an estimated unit cost of $5,813; 200 70-ton gondola cars purchased from the Pullman-Standard Car Manufacturing Company at an estimated unit cost of $5,908; 50 70-ton, mill-type gondola cars purchased from the Bethlehem Steel Company at an estimated unit cost of $6,810; and 25 70-ton covered hopper cars purchased from Pullman-Standard at an estimated unit cost of $6,494. The certificates would be dated April 1 and would mature in 30 semi-annual installments of $230,000 each, beginning October 1. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

New York, New Haven & Hartford.—To assume liability for $2,100,000 of equipment trust certificates to finance in part the acquisition of 12 2,000-hp. Diesel-electric, passenger-freight locomotives from the American Locomotive Company at an estimated unit cost of $225,247, and 15 70-ton covered hopper cars from the Pullman-Standard Car Manufacturing Company at an estimated unit cost of $6,000. The certificates would be dated February 15 and would mature in 15 annual installments of $140,000 each, beginning February 15, 1950. They would be sold on the basis of competitive bids, and the interest rate would be fixed by such bids.

Northern Pacific.—To assume liability for $6,000,000 of equipment trust certificates to finance in part the acquisition of equipment which is expected to cost a total of $7,970,500. The equipment was listed in the application as follows:

	Description and builder	Estimated Unit Cost
2	4,500-hp. Diesel-electric passenger locomotives (Electro-Motive Division, General Motors Corporation)	$579,000
500	self-clearing hopper cars of 70 tons capacity (Pressed Steel Car Company)	5,100
250	steel-sheathed, wood-lined refrigerator cars of 80,000-lb. capacity (Pacific Car & Foundry Co.)	9,630
250	Hart selective ballast cars of 70 tons capacity (American Car & Foundry Co.)	5,000
50	70-ton, 16,000-gal. tank cars (General American Transportation Corporation)	6,740
2	lightweight, steel, roomette and double bedroom sleeping cars (Pullman-Standard Car Manufacturing Company)	134,038

The certificates would be dated March 15, and would mature in 15 annual installments of $400,000 each, beginning March 15, 1950. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

Division 4 of the I. C. C. has **authorized:**

Nashville, Chattanooga & St. Louis.—To assume liability for $4,320,000 of series E equipment trust certificates, proceeds of which will be used to finance in part acquisition of nine Diesel-electric locomotive units of 1,500 hp. each and 1,000 freight cars at an estimated total cost of $5,406,662. The locomotive units, ordered from Electro-Motive Division of General Motors Corporation, will consist of seven "A" units costing $173,756 each and two "B" units costing $167,877 each. The cars, ordered from Pullman-Standard Car Manufacturing Company, will consist of 500 50-ton hopper cars costing $3,802 each and 500 50-ton gondola cars costing $3,906 each. The certificates will be dated February 1 and will mature in 15 annual installments of $288,000 each beginning February 1, 1950. The commission's report approved a selling price of 99.516 with a 2⅜ per cent interest rate—the bid of the Equitable Securities Corporation and Harris, Hall & Co., which will make the average annual interest cost approximately 2.46 per cent. The certificates were reoffered to the public at prices yielding from 1.45 per cent to 2.575 per cent, according to maturity.

Tennessee Central.—To assume liability for $918,000 of 3 per cent equipment trust certificates, series F, which will be sold to the Reconstruction Finance Corporation at par and accrued dividends. The proceeds will be applied toward acquisition of six Diesel-electric locomotives from the American Locomotive Company at a total cost of $1,020,000. The certificates will be dated March 1, and will mature in 20 semi-annual installments, beginning September 1—19 to be of $46,000 each and the last of $44,000. (See *Railway Age* of January 22, page 55).

Average Prices Stocks and Bonds

	Feb. 8	Last week	Last year
Average price of 20 representative railway stocks	40.88	42.85	46.06
Average price of 20 representative railway bonds	88.60	89.58	86.25

Dividends Declared

Akron, Canton & Youngstown.—Common, 50¢, semi-annually, extra, 50¢, both payable April 1 to holders of record March 15; 5% preferred, $2.50, semi-annually, payable April 1 and October 1 to holders of record March 15 and September 15.

RAILWAY OFFICERS

EXECUTIVE

Rex T. Kearney, president and general manager of the Tidewater Southern at Modesto, Cal., whose election also as president and general manager of the Sacramento Northern (a subsidiary of the Western Pacific), with headquarters at Sacramento, Cal., was reported in the *Railway Age* of December 25, was born on June 1, 1900, at Stockton, Cal. Upon graduation from high school in June, 1918, he entered railway service at Stockton as an accountant for the Southern Pacific. In June, 1919, he became employed by the Tidewater Southern (also a subsidiary of the W.P.) as a clerk at Stockton, becoming an accountant in July, 1922, and trainmaster in July, 1927. He was advanced to superintendent at Modesto, Cal., in August, 1933, and to president and general manager in July, 1946, which position he still holds.

George R. Gregg, whose election as vice-president—traffic of the Chicago Great Western at Chicago, was reported in the *Railway Age* of Decem-

GOVERNOR OF INDIANA URGES HIGHER TRUCK FEES

Blasts against "almost criminal disregard for the carrying capacity of most of our pavements," and recommendations for a revision of truck tax laws were among the points made by Gov. Henry F. Schricker, Democrat, of Indiana, in his message to the 86th General Assembly. He said, in part:

"The maintenance of our expensive highway system, coupled with the insistent demand for further extensions and the replacement of hazardous bridges, creates a problem of the first magnitude for our highway department. The same situation also applies to the maintenance and repair of city streets and county highways. All are in financial distress largely owing to the fact that present revenues, though higher than in prewar periods, are no match for the fantastic and inflationary costs of current highway construction.

"The demands of the war and the almost criminal disregard for the carrying capacity of most of our pavements have conspired to bring serious damage, if not complete destruction, to many sections of our highway system. It is high time to call a halt on these violations. I, therefore, recommend a revision of our truck tax laws at this session and the adoption of a schedule of fees that will be in line with higher rates throughout the country."

compared with $76,000,000 for December, 1947, while the net railway operating income for the 1948 month was $64,661,939, as compared with $76,669,093 for December, 1947. The December, 1948, gross was $806,553,949, compared with $804,316,810 for December, 1947; operating expenses totaled $648,741,565, compared with $631,369,661.

Class I roads in the Eastern district (including the Pocahontas region) in 1948 had an estimated net income of $267,000,000 compared with $167,000,000 in 1947. Those same roads in 1948 had a net railway operating income of $429,878,360 compared with $304,426,167 in 1947. Gross in the Eastern district in 1948 totaled $4,407,855,047, an increase of 11.4 per cent compared with 1947, while operating expenses totaled $3,485,336,039, an increase of 8.9 per cent.

Class I roads in the Southern Region in 1948 had an estimated net income of $99,000,000 compared with $63,000,000 in 1947. Those same roads in 1948 had a net railway operating income of $138,971,107 compared with $103,771,466 in 1947. Gross in the Southern region in 1948 totaled $1,317,818,471, an increase of 10.3 per cent compared with 1947, while operating expenses totaled $1,025,570,648, an increase of 8 per cent.

Class I roads in the Western district in 1948 had an estimated net income of $345,000,000 compared with $268,000,000 in 1947. Those same roads in 1948 had a net railway operating income of $433,502,856 compared with $372,240,650 in 1947. Gross in the Western district in 1948 totaled $3,945,902,744, an increase of 11.6 per cent compared with 1947, while operating expenses totaled $2,960,647,400, an increase of 11.7 per cent.

CLASS I RAILROADS — UNITED STATES

	1948	1947
Month of December		
Total operating revenues	$ 806,553,949	$ 804,316,810
Total operating expenses	648,741,565	631,369,661
Operating ratio per cent	80.43	78.50
Taxes	81,604,936	80,852,694
Net railway operating income (Earnings before charges)	64,661,939	76,669,093
Net income, after charges (estimated)	58,000,000	76,000,000
Twelve Months Ended December 31, 1948		
Total operating revenues	$9,671,576,262	$8,686,644,111
Total operating expenses	7,471,554,087	6,798,970,739
Operating ratio per cent	77.25	78.27
Taxes	1,028,530,531	936,529,356
Net railway operating income (Earnings before charges)	1,002,352,323	780,438,283
Net income, after charges (estimated)	711,000,000	498,000,000

K.C.S. Quits Air Business

The Kansas City Southern, which established an air transport subsidiary in 1939, is closing out this venture, according to President W. N. Deramus, because under present conditions it is clear that surface carriers will not be authorized to provide anything but irregular cargo service, a status which is not satisfactory to the railroad. The railroad's subsidiary has been operating four DC-3s in contract freight service for a wide variety of items over irregular routes extending as far east as New York.

Hearings on Western and Southern Traffic Agreements

The Interstate Commerce Commission has set back from February 28 until April 6 the hearing on the application of carrier members of the Western Traffic Association for approval of their proposed rate-procedures agreement. The hearing will be held at Washington, D. C., before the commission's Division 2, consisting of Commissioners Alldredge and Rogers.

Meanwhile, the commission has assigned for hearing at Montgomery, Ala., on March 28, before Commissioner Alldredge the application of southern railroads for approval of a similar agreement to be carried out through the Southern Freight Association, Southern Classification Committee, and Southern Passenger Association.

The applications were filed under the Interstate Commerce Act's section 5a, added last year by the Bulwinkle-Reed Act. The proposal of the western roads is docketed as Section 5a Application No. 2, while the southern roads' proposal is Section 5a Application No. 6. The Brotherhood of Locomotive Engineers has asked the commission for leave to intervene in the former proceeding. Its petition indicated a plan to support the application.

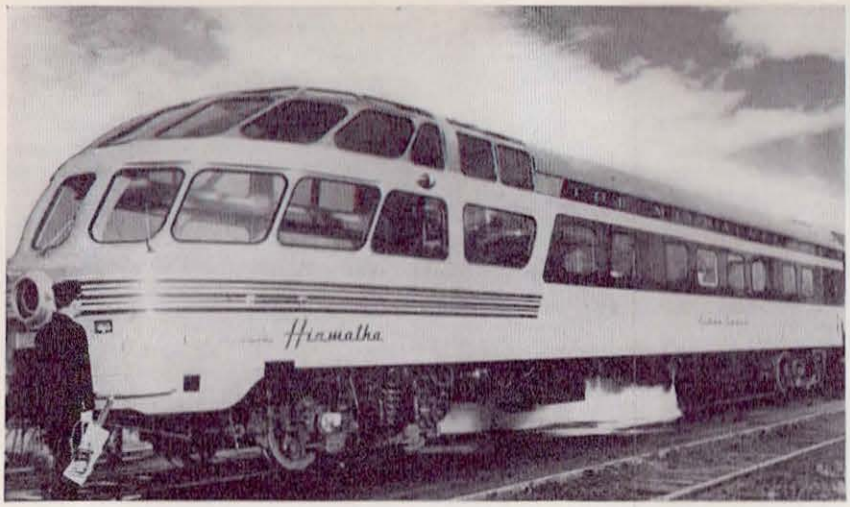
Would Provide R.F.C. Financing for Air Lines

Loans or guarantees from the Reconstruction Finance Corporation in the amount of about $250 million to refinance the air lines were suggested by a member of the Civil Aeronautics Board, Harold A. Jones, in a February 2 address before the Third Annual Air Transport Institute of the American University, Washington, D. C. Mr. Jones said the views he expressed were "entirely my own."

He first outlined the financial plight of regularly scheduled, certificated air lines, noting that proportion of debt to total capitalization had risen from 7.6 per cent in 1940 to approximately 50 per cent as of January 1, 1948. "On top of this heavy burden of funded debt," Mr. Jones continued, "are three years of heavy losses. In 1946, the domestic air lines lost over $5,500,000; in 1947, they lost over $20,000,000; and in 1948, they will lose an estimated $8,000,000 or more. Consequently all the surpluses and reserves of many important air lines have been wiped out. Free working capital has become almost non-existent and resort has been made to short-term borrowing and cash received from advance sales."

Mr. Jones is confident the air lines will eventually "establish a record of regular earnings which will permit equity financing at a reasonable cost." Thus he called his proposal for R.F.C. loans and guarantees an "interim plan." The "short term" phase of the plan would contemplate emergency R.F.C. loans to the air lines for working capital and equipment; and Mr. Jones expressed his view that the R.F.C. has authority to make such loans, provided they are approved by C.A.B., and there is "reasonable assurance" of payments of interest and repayment of the loans. The "present mail policy" of C.A.B., Mr. Jones continued, "should give reasonable assurance" that the borrowing air lines would be provided with the necessary funds to service the loans. Mr. Jones had previously said that, in his opinion, the Civil Aeronautics Act "requires that the board allow mail pay to an honestly and efficiently managed air line sufficient to permit it to break even, and, in addition, to earn a fair return. . .so long as the air line. . .maintains and continues the development of its system to the extent necessary to furnish an honest utility service. . .at reasonable charges without unjust discrimination, performs the postal service required of it, and keeps itself ready to aid in the national defense."

As to the "long-term" phases of his



MILWAUKEE INSTALLS NEW "SKYTOP" LOUNGE-PULLMAN CARS.—The Chicago, Milwaukee, St. Paul & Pacific is placing in service on its "Olympian Hiawatha" six "Skytop" cars of a new type—containing eight double bedrooms in the forward section and lounge space at the rear to accommodate 20 persons. Four of the cars, all of which are being built by the Pullman-Standard Car Manufacturing Company, have already been installed. Each double bedroom is equipped with enclosed toilet facilities, individual temperature controls, public address system and radio outlets. The lounge is enclosed with heat- and glare-resistant triple-pane glass, permitting vision all the way from trackside up to the crest of mountain peaks along the train's scenic route between Chicago and the Pacific Northwest

plan, Mr. Jones said new legislation would be required. He suggested that the R.F.C. Act be amended to permit the lending agency to guarantee equipment-trust certificates of the air lines. It was his further suggestion that these provisions might be like those in the act between 1934 and June 30, 1947, under which R.F.C. was authorized "to relieve the plight of the railroads." As noted above, Mr. Jones put the total amount involved at about $250 million, but he asserted that R.F.C. "would not be giving this money away—it would only be lending it or guaranteeing a loan."

Moreover, he saw in his plan a prospect for "considerable savings" to the government. That prospect was outlined by Mr. Jones in this way: "The sinking fund payments and interest charges on the present funded debt of the air lines amount to over $20,000,000 annually. Insofar as it is not paid by other revenues, it is paid by the government in the form of air-mail pay. If the R.F.C. refinancing reduces these fixed charges, it reduces the amount of air-mail payments and saves the government just that amount."

Barge Line Meets Government's Obligation to Business—Sawyer

Speaking at the annual banquet of the Mississippi Valley Association at St. Louis, Mo., on February 7, Secretary of Commerce Sawyer indicated his view that as soon as the government-owned Federal Barge Line "becomes a profitable operation, the government will get out of the barge business and turn the line over as a going concern to private business—with suitable guarantees that the line will continue to serve inland shippers who want to use water transportation for package and carload shipments."

Mr. Sawyer's view that the government is meeting its "responsibilities" in its operation of the Federal Barge Line was pointed up when he said that private barge lines are now carrying "98 per cent" of the freight on the Mississippi River system; but that the government line "is providing the services that are not given by the private lines." The latter, he said, "have practically abandoned the carrying of carload and package shipments, and they are not providing joint rail-barge service to firms with inland locations. . . . (They) have denied the economies of river transportation to the inland shippers and to the small businessmen who wish to ship in small lots."

He conceded that F. B. L. had not kept pace with the "booming private barge industry," but denied that this failure to compete effectively could be attributed to government operation. "The barge line," Mr. Sawyer continued, "could not compete on an equal basis with the private lines because it was providing services that the private lines were dropping in order to increase their returns on the more profitable services. . . . The fundamental purpose of the government in operating the barge line is to develop the usefulness of the waterways of the Mississippi basin so that all businessmen, whether or not they are located on the rivers, can ship their goods more economically and more profitably. The task of the Inland Waterways Corporation to accomplish this purpose. . . .Modern equipment is being designed and built. I feel confident that with good management and with the cooperation of businessmen and local government agencies the barge line will not only show a profit but will add greatly to the economic wealth of the area."

Railroads Given Until May 1 To Answer Anti-Trust Suit

The federal district court at Lincoln, Neb., has given the 47 western railroads and two railroad associations which are defendants in the government's anti-trust suit at that point until May 1 to file amended or supplemental pleadings and objections to the charge of maintaining non-competitive rates and with acting to retard development of competing forms of transportation. The previous deadline was January 15.

Changes Dates for Two Hearings in Ex Parte 168

New dates have been set by the Interstate Commerce Commission for two of the hearings on the railroads' Ex Parte 168 petition for a 13 per cent increase in freight rates which would supplant the interim advance of 5.2 per cent approved by the commission in its report of December 29, 1948. The new dates were assigned for the hearings at Salt Lake City, Utah, and Oklahoma City, Okla., both of which will now be held on April 4—the former before Commissioner Aitchison and the latter before Commissioner Splawn.

This was announced in a February 4 notice in which dates for other hearings in the case were the same as those set out in a notice issued February 1 and reported in the *Railway Age* of February 5, page 127. These other hearings will be held at Washington, D. C., March 1, at the auditorium of the Department of Commerce, before Division 2, consisting of Commissioners Aitchison, Splawn and Alldredge, and Chairman Mahaffie as an additional member of the division; Chicago, March 14, at the Hotel Morrison, before Division 2; Montgomery, Ala., March 21, at the state capitol, before Commissioner Alldredge, and San Francisco, Cal., March 28, at the offices of the California Public Utilities Commission, before Commissioner Aitchison.

The April 4 hearing at Salt Lake City will be held at the Hotel Utah, while the Oklahoma City hearing on the same date will be held at the Hotel Skirvin Tower. These hearings were originally scheduled for March 21 and March 28, respectively. The date for oral argument in the case remains the same as originally announced—May 16 at the commission's offices in Washington. Amplifying the February 1 notice's statement of the hearings' scope,

the February 4 notice advised that evidence with respect to rates of water carriers in Gulf, coastal, and Pacific coastwise services may be presented at Montgomery and San Francisco, respectively; and that evidence with respect to rates on non-ferrous metals may be presented at Salt Lake City.

February 25 is still the date by which parties are expected to notify the commission of their plans to present testimony at the Washington hearing; but the deadline for notices of plans to appear at the regional hearings has been changed from March 7 to "at least one week in advance" of the regional hearing involved. The commission made no change in the date, May 2, on which briefs of all parties will be due, nor in its plan to receive reply briefs up until the date of the oral argument, May 16.

Reopens Case Involving Allowances For New York Harbor Services

The Interstate Commerce Commission has reopened the case wherein its report of October 11, 1948, prescribed increased allowances out of line-haul rates for car floatage and lighterage performed by railroads serving New York. The case, docketed as No. 29162, involved a complaint filed by the Central of New Jersey, but the higher allowances would have gone to all roads performing floatage or lighterage in New York harbor (see *Railway Age* of October 30, 1948, page 93).

The effective date of the order accompanying the report was originally January 5, but it was later postponed until February 11. By the order reopening the proceeding, it has been postponed again—"pending the further order of the commission." The reopening order did not set the date on which the reargument will be heard.

543 Roads Now in Pact on Car Hire, Demurrage and Storage Rules

More than 200 additional railroads, including the Chesapeake & Ohio, have joined in the application filed recently with the Interstate Commerce Commission for approval of a procedural agreement covering car hire, demurrage and storage rules administered through the Association of American Railroads. The application was filed under the Interstate Commerce Act's section 5a, added last year by the Bulwinkle-Reed Act. The commission has docketed it as Section 5a Application No. 7.

The additional applicants bring the total number of participating roads to 543, representing ownership of approximately 97 per cent of all freight cars used in interchange in the United States, the A.A.R. said. The commission has allowed the Department of Justice until March 10 to file its objections to the proposed agreement, and to the rate-procedures agreement (Section 5a Application No. 6) being proposed by southern railroads (see *Railway Age* of January 15, page 41, and page 66).

J. H. W. Conklin Named Head Of Materials Handling Group

J. H. W. Conklin, sales manager of the industrial truck division of the Clark Equipment Company, Battle Creek, Mich., was elected president of the Materials Handling Institute at the annual election of officers held in Philadelphia, Pa., on the last day of the recent National Materials Handling Exposition. Mr. Conklin succeeds S. W. Gibb, sales manager of the Yale & Towne Manufacturing Co. Other officers elected for 1949 are: J. G. Bucuss, Acme Steel Company, first vice-president; J. P. Lawrence, American MonoRail Company, second vice-president and R. Kennedy Hanson, secretary-treasurer.

J. H. W. Conklin

Argument March 9 on What Constitutes Private Trucking

March 9 has been set by the Interstate Commerce Commission as the date on which it will hear oral argument in two reopened proceedings that involve the distinction between private and for-hire trucking. The proceedings are Nos. MC-96541 and MC-107079, in which the trucking operations of the Lenoir Chair Company and the Schenley Distillers Corporation, respectively, are in issue (see *Railway Age* of January 22, page 50).

1948 Third-Quarter Loading Estimates 3.5 Per Cent High

The 13 Shippers Regional Advisory Boards overestimated car loadings for the third quarter of 1948 by 3.5 per cent, according to the latest comparison of forecasts with actual loadings issued by A. H. Gass, chairman of the Car Service Division, Association of American Railroads. The variations by individual boards ranged from an overestimate of 2.5 per cent to an underestimate of 2.5 per cent, while variations by commodities ranged from an overestimate of 25.3 per cent in the case of poultry and dairy products to an underestimate of 37.3 per cent on cotton seed, soybean-vegetable cake and meal, excluding oil.

The report shows that there were overestimates in 23 commodity groups and underestimates in 9. In addition to poultry and dairy products, there were overestimates of 15.4 per cent on machinery and boilers; 15.1 per cent on fresh fruits, other than citrus; 13.7 on live stock; and 13.1 on salt. The larger underestimates, in addition to that on cotton seed, soybean-vegetable cake and meal, excluding oil were 23.8 per cent on cotton and 23.7 per cent on potatoes.

COMPARISON NATIONAL FORECAST WITH ACTUAL LOADINGS—THIRD QUARTER 1948

Board	Carloadings Third Quarter 1948 Estimated	Actual	Percentage of Accuracy Over Est.	Under Est.
Central Western	340,261	305,035	10.4	
Pacific Coast	437,058	390,270	10.7	
Pacific Northwest	292,373	299,649		2.5
Great Lakes	748,052	675,836	9.7	
Ohio Valley	1,061,031	1,078,257		1.6
Mid-West	1,059,037	986,878	6.8	
Northwest	848,737	830,932	2.1	
Trans-Mo-Kansas	492,305	475,876	3.3	
Southeast	961,765	944,463	1.8	
Southwest	618,966	596,439	3.6	
New England	132,294	123,317	6.8	
Atlantic States	934,352	944,426		1.1
Allegheny	1,212,144	1,167,384	3.7	
TOTAL	9,138,375	8,818,762	3.5	

A. A. R. Issues Seventh Edition of "Quiz" Booklet

The seventh edition of the Association of American Railroads' "Quiz" booklet on railroads and railroading has been made available for distribution.

The new edition, dated December, 1948, differs in several respects from the sixth edition. The cover has been revised, and a new color scheme used. For reasons of economy, the size of the book has been reduced to 7 in. by 10 in.; the number of inside pages from 80 to 64; and the number of questions and answers from 450 to 268. The number of illustrations, however, is about the same as in the previous edition, and most of the same information—up to date, of course—has been retained by combining questions and answers.

Budd Delivers 1,000th Car

The 1,000th all-stainless steel railroad passenger car built by the Budd Company was delivered to the New York Central on January 29, for service on the "Ohio State Limited" between New York and Cincinnati, Ohio. The car has 6 double bedrooms and 10 roomettes. Each room has its own wash basin and toilet, fluorescent lighting, individually controlled air-conditioning and heating, a large panorama window, an enclosed wardrobe and seats for two or four, depending on the type of room. The 1,000 cars already delivered represent an investment of more than $90,000,000 by 22 railroads in the United States,

South America and Europe. Budd completed its first modern streamliner—the "Pioneer Zephyr"—for the Chicago, Burlington & Quincy in April, 1934.

Freight Car Loadings

Loadings of revenue freight in the week ended February 5 totaled 682,143 cars, the Association of American Railroads announced on February 10. This was an increase of 2,888 cars, or 0.4 per cent, over the previous week, a decrease of 64,793 cars, or 8.7 per cent, under the corresponding week last year, and a drop of 85,158 cars, or 11.1 per cent, under the equivalent 1947 week.

Loadings of revenue freight for the week ended January 29 totaled 679,255 cars; the summary for that week as compiled by the Car Service Division, A.A.R., follows:

Revenue Freight Car Loadings
For the week ended Saturday, January 29

District	1949	1948	1947
Eastern	131,267	135,457	159,239
Allegheny	150,987	153,524	181,555
Pocahontas	56,659	62,092	71,189
Southern	118,495	118,363	147,422
Northwestern	69,026	83,080	81,625
Central Western	100,270	119,337	127,111
Southwestern	52,551	54,492	66,910
Total Western Districts	221,847	256,909	275,646
Total All Roads	679,255	726,345	835,051
Commodities:			
Grain and grain products	39,413	40,913	53,664
Livestock	9,111	9,393	11,744
Coal	146,189	170,471	198,310
Coke	15,686	14,790	14,635
Forest products	32,689	36,925	50,813
Ore	12,396	9,008	12,900
Merchandise l.c.l.	90,733	102,875	118,777
Miscellaneous	333,038	341,970	374,208
January 29	679,255	726,345	835,051
January 22	709,585	771,139	821,928
January 15	733,272	808,308	828,060
January 8	721,507	830,810	830,953
Cumulative total 4 weeks	2,843,619	3,136,602	3,315,992

In Canada.—Carloadings for the week ended January 29 totaled 71,850 cars, as compared with 71,776 cars for the previous week, and 73,189 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
January 29, 1949	71,850	32,057
January 31, 1948	73,189	33,505
Cumulative totals for Canada:		
January 29, 1949	266,129	127,268
January 31, 1948	295,565	136,818

Canadian Roads Ask General Rate Increase for Mountain Differential

Canadian railways have called on the Board of Transport Commissioners to give them a compensating general freight-rate increase if it should decide to remove the so-called Rocky Mountain differential.

As the board concluded hearings on British Columbia's application for removal of the 1¼-times normal mountain rate, the Canadian Pacific asked that its elimination, if approved, be accompanied by an immediate two per cent increase in freight rates generally. The Canadian National asked for an increase corresponding to the loss of revenue, but did not specify a percentage. The railways joined in asking that if the B. C. application is not dismissed, it be deferred for consideration with other rate inequalities in the general inquiry into the freight-rate structure which the Canadian Cabinet has instructed the board to undertake.

The proposals for new increases in the event of removal of the special western rate came as the board prepared to resume hearings on a railway application for a general 20 per cent freight increase.

ORGANIZATIONS

The February 18 meeting of the **Toronto Railway Club**, designated as Ladies' Night, will be held in the Royal York Hotel, Toronto, Ont., at 8:30 p.m.

The **Northwest Locomotive Association** will hold its next meeting on February 21, at 8 p.m. at the Midway Club, 1931 University avenue, St. Paul, Minn.

The **Railway Club of Pittsburgh** will hold its next meeting on February 24, at 8 p.m., at the Fort Pitt Hotel, Pittsburgh, Pa. C. C. Pitcher, chief of yard and terminal operations, Baltimore & Ohio, will address the club on "Terminal Operation." A picture by the Aluminum Company of America, "Tilting the Obelisk," will be shown.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION—Lawrence Wilcox, Room 827, 80 E. Jackson Blvd., Chicago 4, Ill. Annual meeting, September 19-22, 1949 Hotel Sherman, Chicago, Ill.

ALLIED RAILWAY SUPPLY ASSOCIATION.—C. F. Weil, American Brake Shoe Company, 6th Floor, 109 N. Wabash Ave., Chicago 2, Ill. Exhibit in conjunction with the meeting of the coordinated Railroad Mechanical Associations, September 19-22, 1949, Hotel Sherman, Chicago, Ill.

AMERICAN ASSOCIATION OF BAGGAGE TRAFFIC MANAGERS.—E. P. Soebbing, 1450 Railway Exchange Bldg., St. Louis 1, Mo. Annual meeting, June 27-29, 1949, French Lick Springs Hotel, French Lick, Ind.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC AGENTS.—C. A. Melin, 11115 Lake Ave., Cleveland 2, O.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—B. D. Branch, C.R.R. of N. J. 143 Liberty St., New York 6, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—Miss Elise La Chance, Room 901, 431 S. Dearborn St., Chicago 5, Ill. Annual meeting, June 14-16, 1949, Stevens Hotel, Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—Miss Elise LaChance, Room 901, 431 S. Dearborn St., Chicago 5, Ill. Annual meeting, September 12-14 1949, Hotel Stevens, Chicago, Ill.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York 6, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION—L. P. East, Pennsylvania Railroad, Richmond, Ind. Annual meeting, April 17-20, 1949, Chamberlin Hotel, Old Point Comfort, Va.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in cooperation with the Association of American Railroads, Engineering Division.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, March 15-17, 1949, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—Hugh L. Fitts, Missouri Pacific Magazine, 1400 M. P. Bldg., St. Louis 3, Mo.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—C. E. Huntley, Tower Bldg., Washington 5, D. C.

AMERICAN SOCIETY FOR TESTING MATERIALS.—R. J. Painter, Asst. Secretary, 1916 Race St., Philadelphia 3, Pa. Spring meeting and A.S.T.M. Committee Week, February 28-March 4, 1949 Edgewater Beach Hotel, Chicago, Ill. Annual meeting, June 27-July 1, 1949, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York 18, N. Y.

Railroad Division.—E. L. Woodward, Railway Mechanical Engineer, 105 W. Adams St., Chicago 3, Ill.

AMERICAN WOOD-PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington 5, D. C. Annual meeting, April 26-28, 1949, Jefferson Hotel, St. Louis, Mo.

ASSOCIATED TRAFFIC CLUBS OF AMERICA, INC.—R. A. Ellison, Cincinnati Chamber of Commerce, 1203 C. of C. Bldg., Cincinnati 2, O.

ASSOCIATION OF AMERICAN RAILROAD DINING CAR OFFICERS.—W. F. Ziervogel, 605 S. Ranken Ave., St. Louis 3, Mo.

ASSOCIATION OF AMERICAN RAILROADS.—George M. Campbell, Transportation Bldg., Washington 6, D. C.

Operations and Maintenance Department.—J. H. Aydelott, Vice-President, Transportation Bldg., Washington 6, D. C.

Operating-Transportation Division.—L. R. Knott, 59 E. Van Buren St., Chicago 5, Ill.

Operating Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y.

Transportation Section.—H. A. Eaton, 59 E. Van Buren St., Chicago 5, Ill.

Communications Section.—A. H. Grothmann, 30 Vesey St., New York 7, N. Y.

Fire Protection and Insurance Section.—W. E. Todd, 59 E. Van Buren St., Chicago 5, Ill.

Freight Station Section.—W. E. Todd, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, May 25-27, 1949 Congress Hotel, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y. Annual meeting June 6, 1949, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J.

Protective Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y. Annual meeting, May 2-4, 1949, Edgewater Gulf Hotel, Edgewater Park, Miss.

Safety Section.—J. C. Caviston, 30 Vesey St., New York 7, N. Y. Annual meeting, May 23-25, 1949, St. Paul Hotel, St. Paul, Minn.

Engineering Division.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill.

Construction and Maintenance Section.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, March 15-17, 1949, Palmer House, Chicago, Ill.

Electrical Section.—W. S. Lacher, 59 E. Van Buren St., Chicago 5, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York 7, N. Y. Annual meeting, September 12-14, 1949, Edgewater Beach Hotel, Chicago, Ill.

Mechanical Division.—Arthur C. Browning, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, June 27-29, 1949, Congress Hotel, Chicago, Ill.

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EQUIPMENT AND SUPPLIES

FREIGHT CARS

8,913 Freight-Train Cars Delivered in January

Freight-train cars for domestic use delivered in January totaled 8,913, including 2,783 built in railroad shops, compared with December production of 9,967, which included 2,307 cars built in railroad shops, the American Railway

Car Institute has announced. January production included 1,705 box cars, 3,318 hopper cars, 2,283 gondola cars, 880 refrigerator cars, 584 tank cars and 143 cars of other types.

Freight-train cars ordered last month for domestic use numbered 1,568, including 175 ordered from railroad shops, compared with December orders for 8,368, including 3,400 ordered from railroad shops. Of the January orders, 1,000 were "standard model" cars to be built for stock by one of the car builders, making net orders by railroads and private car lines 568. On order and undelivered on February 1 for domestic use were 96,214 cars, including 36,230 ordered from railroad shops. Cars on order February 1, 1948, numbered 119,711.

SIGNALING

The **Canadian National** has ordered materials from the General Railway Signal Company, for installation of absolute permissive block signaling on 91 mi. of single track between Spence's Bridge, B. C., and Hope. Equipment will include Type SA searchlight signals, Type B plug-in relays, Type W signals, Model 7 switch circuit controllers, and welded steel instrument cases.

The **Wheeling & Lake Erie** has contracted with the Union Switch & Signal Co. for installation of centralized traffic control on 48 mi. of single track between Bellevue, Ohio, and Homestead at Toledo. The Style C control machine will be located at Brewster, Ohio, as an addition to the machine which now controls the 80-mi. section from Brewster to Bellevue. The complete signaled territory will be handled by coded carrier line. The project involves Style H-2 searchlight signals, Style M-22A dual-control electric switch movements, Style SL-6A electric locks for main line hand-thrown switches, all code equipment, relays, rectifiers, transformers and housings.

MARINE

The **Lehigh Valley** has ordered four Diesel-powered tugs, described as the most powerful in New York harbor, from Jacobson's Ship Yard, Inc., Oyster Bay, N. Y. The first is scheduled to be delivered in August, 1949, others in October and December, and the fourth in February, 1950. The tugs will be powered by 1,350-hp. electric engines manufactured by the Cleveland Diesel Engine Division of General Motors Corporation, and will be equipped with three-way radio telephones providing ship-to-shore, shore-to-ship and ship-to-ship communication. The tugs will be 106 ft. in length with 27-ft. beam. Two will have low pilot houses, permitting operation in the Harlem river where bridge clearances are limited. Hulls and superstructures will be electric welded.

SUPPLY TRADE

Charles A. Lynn, sales representative for **E. I. du Pont de Nemours & Co.,** with headquarters at Philadelphia, Pa., has retired after 31 years service with the company. Mr. Lynn joined du Pont in 1917 as a correspondent for industrial and railway sales in the Philadelphia office. Since 1922 he has been a sales representative, specializing in paints, varnishes, enamels and lacquers for railroads.

The **Le Roi Company,** Milwaukee, Wis., has appointed **William D. Hoffman,** 3207 Kensington avenue, Philadelphia 34, Pa., as railroad sales agent.

Andrew G. Finigan, formerly superintendent of the locomotive division, **Electro-Motive Division of General Motors Corporation,** La Grange, Ill., has been appointed manager of the firm's new plant No. 3 at Cleveland, Ohio. Mr. Finigan has been associated with Electro-Motive since 1923, having supervised construction of the firm's earliest rail cars at the plants of sub-contractors. He supervised installation of the power plant and the rebuilding of cars for the Chicago Great Western's "Blue Bird," a 1928 forerunner of the Diesel streamlined train. When Electro-Motive obtained the contract for designing and supplying the power plant for the "Pioneer Zephyr," Mr. Finigan had charge of the propulsion machinery work at the Philadelphia (Pa.) plant

Andrew G. Finigan

where the train was built. He also participated in construction and testing of a number of early G.M.-powered Diesel streamlined trains, among them the Union Pacific's M10001. Prior to his association with Electro-Motive, Mr. Finigan served as a toolmaker at the General Electric Company in Schenectady, N. Y. In 1908 he became a member of the crew which subsequently built the original G. E. gasoline-electric rail cars. Later, after G. E. abandoned construction of rail cars, he became an automobile dealer at Erie, Pa. He next joined Electro-Motive, then located at Cleveland, and has served with the firm continuously. He had been superintendent of the locomotive division at La Grange since construction of that plant in 1935.

Walter D. DeLamater has been elected a vice-president of the **Heli-Coil Corporation** of Long Island City, N. Y. For many years, Mr. DeLamater has been active in the textile industry, operating under the firm name of Walter A. DeLamater & Co.

William I. Ong, formerly public relations director of the **American Steel & Wire Co.,** a subsidiary of the United States Steel Corporation, has been appointed assistant to the president of firm. He is succeeded by **Lewis E. Zender.**

Francis W. Vigneault, Jr., has been appointed district representative for tractor equipment in the northeastern territory for the **Hyster Company.**

The **Chain Belt Company** of Milwaukee, Wis., has announced the removal of its Los Angeles, Cal., district office and warehouse to new and larger quarters at 3838 Santa Fe avenue, Los Angeles 11. **J. V. MacDonald** will continue as district manager in charge.

SKF Industries has announced the appointment of **Stuart H. Smith,** formerly assistant district manager of the Detroit, Mich., office, as Cincinnati, Ohio, district manager. The following field representatives also were announced: **C. N. Benson** and **D. B. Eden,** Boston, Mass.; **A. R. Ehrnschwender,** Cincinnati; **J. T. Paradise,** Atlanta, Ga., and **G. L. Hansen,** Portland, Ore.

Charles R. Strong, formerly vice-president and manager of the **Central Supply Company of Virginia,** has been elected president, with headquarters at Andover, Va., to succeed **Clyde B. Crusan,** retired. Mr. Crusan will continue as a member of the board of directors. The company also has announced the election of **Frederick T. Richards,** formerly assistant to the president, as chairman of the board, a newly created position, with headquarters at 123 South Broad street, Philadelphia 9, Pa.

William E. Gadd, manager of vapor-drying sales, has been appointed to the newly created position of manager of the vapor-drying division of the **Taylor-Colquitt Company,** in charge of sales, process engineering and research, with headquarters as before at Spartanburg, S. C. **D. M. Graves** has been appointed sales engineer of the vapor-drying division.

William J. Mays has been elected a vice-president, and **H. Douglas Chisholm** secretary of **Cordley & Hayes.** Mr. Chisholm will assume the former duties of Mr. Mays as secretary and purchasing

agent, and also will continue as controller.

The **Gits Brothers Manufacturing Company** has appointed **Frank A. Kovarik,** general sales manager, to establish and manage its new Michigan branch office in Ludington, where operations for the entire state will be supervised.

Andrew B. Ledwith, assistant advertising manager of the **Union Switch & Signal Co.,** Swissvale, Pa., has been appointed advertising manager. Mr. Ledwith was graduated from the Wilkinsburg, Pa., high school in 1919 and continued his education at night school at the Carnegie Institute of Technology. He was first employed in the mechanical department of the Union Railroad and on

Andrew B. Ledwith

April 26, 1922, joined the advertising department of Union Switch & Signal, where he has since worked continuously, with the exception of a 14-month period when he was district manager of the A. L. Lochman Company of Pittsburgh, Pa. Mr. Ledwith was appointed assistant advertising manager in April, 1945.

Appointment of the **Victor Equipment Company,** San Francisco, Cal., as exclusive distributor for **Nelson Stud Welding** equipment and products in the Pacific coast area has been announced by Leonard C. Barr, vice-president of the **Morton Gregory Corporation** and general sales manager of its Nelson Stud Welding division, Lorain, Ohio. The distributorship will cover both sale and rental of Nelson Stud welding guns and control units, and sale of Nelson flux-filled studs and other fasteners in California, Oregon, Washington, Nevada and Idaho.

The Cleco division of the **Reed Roller Bit Company** has announced the appointment of **Glenn Logan** as special representative, at 502 Teters building, Atlanta, Ga. Mr. Logan will act as liaison between the general sales office in Houston, Tex., and local dealer organizations.

The **Bond Industrial Equipment Company,** 51 Clarkson street, New York, has been appointed distributor of the complete line of fork lift trucks and industrial towing tractors of the **Clark Equipment Company.**

C. H. Bartlett has been appointed manager of power transformer sales of the Westinghouse transformer division of the **Westinghouse Electric Corporation,** at Sharon, Pa. Mr. Bartlett has been manager of the specialty transformer department since he organized it in 1945.

OBITUARY

John Forsythe Alexander, special representative to the steel industry for the Signode Steel Strapping Company, Chicago, died at the Presbyterian hospital in that city on February 7.

James Ferris Seiler, an engineer with the service bureau of the American Wood-Preservers' Association, with headquarters at Washington, D. C., died in that city on January 16.

CONSTRUCTION

Missouri Pacific Announces Details Of 1949 Improvement Program

The Missouri Pacific has made available additional details concerning its plan to spend in excess of $13,000,000 for improvement of its properties during 1949, a brief notice of which appeared in the *Railway Age* of January 22, page 55. A total of 168.9 mi. of new rail is to be laid on the northern lines and 61 mi. on the Texas lines, with the replaced rail going to secondary main lines. Construction work at freight yards, extension of yard tracks and miscellaneous sidings, and similar projects, will amount to $594,000 on northern lines, $482,950 on the Gulf Coast Lines and $411,230 on the International-Great Northern. The $1,345,640 allotted to bridges, trestles and culverts is to be spent on the road's northern lines and its Texas-Louisiana lines, the major portion of the work involving the replacement of many existing timber structures with concrete construction. The changes in grade and alignment, expected to cost some $957,700 in 1949, will be made principally on the road's Missouri division in the vicinity of Gad's Hill, approximately 111 mi. south of St. Louis, Mo. A new main track is being constructed there to reduce curvature and grades in the existing track. Other projects of this nature are scheduled at Wellington, Mo., and O'Brien, Kan., and a track and bridge raising job is to be undertaken at Fort Cook, Neb.

The largest single project in the $763,400 authorization for signal work is the centralized traffic control system to be installed between Middlebrook, Mo. (83 mi. south of St. Louis) and Mill Spring, on some 51 mi. of mainline track to Texas and the southwest. This project will cost an estimated $362,000. An automatic block signal installation costing $204,000 is planned for 39 mi. of the principal freight line on the Illinois division between Bixby and Flinton. Other projects on the 1949 signal program scale downward in cost from a $60,000 c.t.c. plant at Fort Cook, to a $1,300 track circuit job at Mt. Vernon, Ill.

The road contemplates considerable modernization, enlarging and rearranging of freight and passenger station facilities during 1949. Allotted for this work is $150,800 on the northern lines, $446,740 on the Gulf Coast Lines and $75,000 on the I.-G.N. The largest single item in this category is to be a $350,000 l.c.l. freight house in the Gulf Coast yards at Houston, Tex.

Expansion of Diesel servicing facilities at the road's Ewing Avenue shops in St. Louis is to be continued during the year, with extension of repair tracks, installation of a 100-ton drop-table for wheel changing, construction of another elevated "pit" track inside the Diesel servicing building, installation of heating facilities and completion of other miscellaneous work. Some $25,000 worth of shop construction will be undertaken at the DeSoto (Mo.) freight car plant, and a like amount is to be spent on improvements at the Sedalia (Mo.) coach shops. Additional Diesel servicing facilities are to be built at Houston at a cost of $125,000, while an additional $121,000 has been allocated for expansion of the Houston general shop and terminal facilities.

Chicago & North Western.—This road's forces have undertaken the following projects, some of which are in cooperation with private contractors (estimated costs in parentheses): Install flashing light signals with traffic and sidewalk gate arms to replace wigwag signals at Main street, Mount Prospect, Ill. ($24,400); construct 150-ton structural steel coaling station at Butler, Wis. ($63,800), Ross & White Co. being the contractor; replace at Waukegan, Ill., bridges 1386 and 1386A, which carry two main tracks and a side track ($35,760); construct jointly with the Chicago, Milwaukee, St. Paul & Pacific additional trackage on the Menominee Belt Line at Milwaukee, Wis. ($45,000); install in the Chicago shops a new 95-ft. continuous-type, 3-point bearing turntable with built-in tractor equipment to replace the present turntable at building M-17, the new equipment being furnished by Young Manufacturing Company ($47,900); and install reinforced concrete buttresses in front of both abutments at bridge No. 66 over the Fox river at Geneva, Ill., the Erik A. Borg Company assisting in the work ($44,000). The Chicago, St. Paul, Minneapolis & Omaha (part

of the North Western System) is rebuilding bridge No. 714 at Haugen, Wis., as a three-span deck plate—girder on concrete pile abutments and piers, replacing through riveted truss span on masonry and three pile bent spans at each end ($45,165). The Omaha road is also replacing with concrete the timber and brick roadway of bridge No. 446½ over Payne avenue at St. Paul, Minn., and renewing railings and structural steel ($43,200).

Southern Pacific.—This road is spending in excess of $1,250,000 for facilities to service freight and passenger Diesel locomotives at Los Angeles, Cal. A contract was awarded recently to Vinnell Company for erecting the superstructure of a 353-ft. by 141-ft steel and concrete inspection shop and store building on foundations prepared by railroad forces. It will house six inspection pits with elevated platforms and depressed floor between pits, a semi-basement storeroom, and pipe and ventilating tunnel; will be mechanically ventilated and heated by ducts and blowers, and is to be equipped with an automatic sprinkler system. The shop area will have fluorescent lights and a tramrail system including two cranes. The facilities also include a 220-ft. outside inspection pit and mechanical engine washer; lubricating oil, fuel oil, water and sanding facilities; 10,000-bbl. oil storage tank, and other necessary installations.

Texas & Pacific.—This road is building a combination freight and passenger station at Midland, Tex., at an estimated cost of $175,000. The one-story structure, 25 ft. by 252 ft., is to be of concrete and brick, with asbestos shingle roof; the contractor is Fulcher-Burgher Construction Company, Austin, Tex. A contract has also been awarded to the J. W. Bateson Company, Dallas, Tex., for construction in that city of a 60-ft. by 200-ft. one-story motor transport garage, at an estimated cost of $164,000. The building is to be of concrete block and steel, with corrugated asbestos roof.

ABANDONMENTS

Division 4 of the Interstate Commerce Commission has **authorized:**

Atlantic Coast Line.—To abandon operation over the line of its lessor, the Tampa Southern, between Belspur, Fla., and Southfort, 35 miles. The same report authorized the lessor to abandon the line. Although the abandonment was opposed by local interests, including the Sarasota (Fla.) Chamber of Commerce, the commission stated the tributary territory has no present sources of traffic from which the line could increase its tonnage.

Waco, Beaumont, Trinity & Sabine.—To abandon its 23.8-mi. Livingston division, which extends from a point near Luce, Texas, to Livingston. The commission's report said that the present physical condition of the line does not permit operation, and the traffic available or in prospect does not warrant the "large" expenditures required for its rehabilitation. It added that transportation services now required by the territory are being supplied by buses and trucks.

Yakima Valley Transportation.—To abandon a 1.85-mi. branch from Fruitvale Junction, Wash., to Fruitvale.

Application has been filed with the I. C. C. by:

Southern.—To abandon a 13.3-mi. line extending from Lilita, Ala., to McDowell.

FINANCIAL

Long Island "Virtually Bankrupt," Franklin Tells Commission

The Long Island, with a total debt of approximately $53 million, and available cash of only about $60,000, as of January 31, is so nearly bankrupt that its owner, the Pennsylvania, may be forced to "get rid of it," Walter S. Franklin, executive vice-president of both roads, told the New York Public Service Commission at a February 7 hearing on the Long Island's application (reported in the *Railway Age* of November 13, 1948) for an average 25 per cent increase in commutation fares.

The Long Island, Mr. Franklin said, has failed to pay the Pennsylvania $2,900,000 for settlements made for it in January; will be unable to meet a $40 million bond issue maturing March 1, which the Pennsylvania will have to take care of; and has outstanding $9,480,000 of Pennsylvania-guaranteed 1948 equipment trust certificates which, however, are not immediately due. He added that the Long Island lost $2 million on its operations in November and December, 1948, and is faced with an anticipated $8 million loss in 1949, even if it receives the pending commutation fare increase and a freight rate increase pending before the Interstate Commerce Commission. "There is no chance of making money on this property," he added, "and therefore no inducement for anybody to invest in it."

Mr. Franklin further testified that the Long Island had already spent more than $10 million on its $18,500,000 improvement program, using money obtained from profits made from 1943 to 1945 and from real estate sales, but that he "did not know" where money for the rest of the program was coming from. Mr. Franklin described the road's current commuter rate of 1.07 cents per mile as the lowest in the United States, and said that revenues were being adversely affected by a business drop on Long Island. Passengers carried in 1948 totaled 109 million, compared to 112 million in 1947, he stated, adding that the road's 1947-1948 county real estate taxes, exclusive of city and state taxes, amounted to $3,226,727.

Akron, Canton & Youngstown.—*Explains Intervention in Lease Application.*—Because "there have been so many questions as to the reasons for the A. C. & Y. having intervened in the Interstate Commerce Commission hearing on the proposed lease of the Wheeling & Lake Erie by the Nickel Plate" (New York, Chicago & St. Louis), Ralph J. Hanson, vice-president—traffic of the A. C. & Y. has outlined his company's position in a letter to its patrons. Mr. Hanson's letter states that, under the proposed lease arrangement (Finance Docket No. 16308, reported in the *Railway Age* of October 23, 1948, page 62, and November 27, page 50), the Nickel Plate asked authority to abandon the name of the W. & L. E. "The Nickel Plate," the letter continues, "would then have four connections with the A. C. & Y. . . . Such a situation would not only bisect but practically surround the A. C. & Y. and give the Nickel Plate advantages not heretofore existing of interchanging freight at nearby junctions with the threat of depleting the A. C. & Y.'s revenues to the extent of approximately $723,000, or about 14 per cent of its gross.

"The A. C. & Y. intervention is sought only to preserve the present interchange and solicitation practises and the name of the W. & L. E. in routing tariffs. Such we felt would automatically maintain the status quo without prejudice to either the A. C. & Y. or the Nickel Plate, and still preserve to the Nickel Plate any inherent operating economies of consolidated operations. We offered no objection to the principle of the lease and unified operation of the Nickel Plate and Wheeling."

The A. C. & Y. has also asked the commission to suspend certain tariffs published at the request of the Nickel Plate which would have the effect of cancelling certain joint rates in connection with the A. C. & Y.

Alabama Great Southern.—*Purchase Authorization.*—Division 4 of the Interstate Commerce Commission has authorized this road to purchase from its parent company, the Southern, a line from Attalla, Ala., to Gadsden, 7.1 miles. The purchase price is $145,000. The line is part of one which a commission report of July 28, 1948, authorized the Southern to abandon.

Illinois Central. — *New Director.* — James R. Leavell, Ocean Springs, Miss., retired president of the Continental Illinois National Bank & Trust Co. of Chicago, will be elected a director of this road on February 18.

Wheeling & Lake Erie.—*White Elected Chairman of Board.*—Lynne L. White, whose election as president of the New

York, Chicago & St. Louis on January 26 was reported in the *Railway Age* of January 29, was also elected to succeed the late John W. Davin as chairman of the board of the Wheeling & Lake Erie at a special meeting of the directors of that company on February 8.

New Securities

Applications have been filed with the Interstate Commerce Commission by:

Chicago, Indianapolis & Louisville.—To assume liability for $4,500,000 of equipment trust certificates to finance in part the acquisition of equipment delivered in 1946 and 1947 and now used under conditional sales agreements, and the following new equipment:

	Description and builder	Estimated Unit Cost
3	1,500-hp. Diesel-electric switching locomotives (Electro-Motive Division, General Motors Corporation)	$153,558
2	600-hp. Diesel-electric switching locomotives (Electro-Motive)	83,554
30	50-ton box cars (Pullman-Standard Car Manufacturing Company)	4,955
15	single-deck stock cars (Monon shops)	4,540

The equipment delivered in 1946 and 1947, which would be brought under the trust agreement, consists of 599 freight cars, 12 Diesel-electric locomotives, and 28 passenger-train cars. The certificates would be dated March 1 and would mature in 15 annual installments of $300,000 each, beginning March 1, 1950. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

Delaware & Hudson.—To assume liability for $4,800,000 of equipment trust certificates to finance in part the acquisition of 29 Diesel-electric locomotives and 600 freight cars as follows:

	Description and builder	Estimated Unit Cost
10	1,000-hp. Diesel-electric switching locomotives (American Locomotive Company)	$105,163
2	1,500-hp. Diesel-electric road switching locomotives (American)	144,861
5	1,000-hp. Diesel-electric switching locomotives (American)	106,179
7	1,500-hp. Diesel-electric road switching locomotives (American)	153,522
5	1,500-hp. Diesel-electric road switching locomotives (American)	145,039
100	covered hopper cars (Greenville Steel Car Company)	6,037
300	box cars (D. & H. shops)	4,761
200	gondola cars (D. & H. shops)	3,944

The application put the estimated total cost of the equipment at $6,492,925. The certificates would be dated March 1, and would mature in 20 semi-annual installments of $240,000 each, beginning September 1. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

Denver & Rio Grande Western.—To assume liability for $6,900,000 of series N equipment trust certificates to finance in part the acquisition of seven Diesel-electric locomotives and 775 freight cars at an estimated total cost of $9,203,860. The Diesels will be 6,000-hp. freight locomotives purchased from the Electro-Motive Division, General Motors Corporation, at an estimated cost of $658,959 apiece; each will consist of two 1,500-hp. lead units and two 1,500-hp. booster units. The 775 freight cars will include 500 50-ton, drop-bottom gondola cars purchased from the Pressed Steel Car Company at an estimated unit cost of $5,813; 200 70-ton gondola cars purchased from the Pullman-Standard Car Manufacturing Company at an estimated unit cost of $5,908; 50 70-ton, mill-type gondola cars purchased from the Bethlehem Steel Company at an estimated unit cost of $6,810; and 25 70-ton covered hopper cars purchased from Pullman-Standard at an estimated unit cost of $6,494. The certificates would be dated April 1 and would mature in 30 semi-annual installments of $230,000 each, beginning October 1. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

New York, New Haven & Hartford.—To assume liability for $2,100,000 of equipment trust certificates to finance in part the acquisition of 12 2,000-hp. Diesel-electric, passenger-freight locomotives from the American Locomotive Company at an estimated unit cost of $225,247, and 15 70-ton covered hopper cars from the Pullman-Standard Car Manufacturing Company at an estimated unit cost of $6,000. The certificates would be dated February 15 and would mature in 15 annual installments of $140,000 each, beginning February 15, 1950. They would be sold on the basis of competitive bids, and the interest rate would be fixed by such bids.

Northern Pacific.—To assume liability for $6,000,000 of equipment trust certificates to finance in part the acquisition of equipment which is expected to cost a total of $7,970,500. The equipment was listed in the application as follows:

	Description and builder	Estimated Unit Cost
2	4,500-hp. Diesel-electric passenger locomotives (Electro-Motive Division, General Motors Corporation)	$579,000
500	self-clearing hopper cars of 70 tons capacity (Pressed Steel Car Company)	5,100
250	steel-sheathed, wood-lined refrigerator cars of 80,000-lb. capacity (Pacific Car & Foundry Co.)	9,630
250	Hart selective ballast cars of 70 tons capacity (American Car & Foundry Co.)	5,000
50	70-ton, 16,000-gal. tank cars (General American Transportation Corporation)	6,740
2	lightweight, steel, roomette and double bedroom sleeping cars (Pullman-Standard Car Manufacturing Company)	134,038

The certificates would be dated March 15, and would mature in 15 annual installments of $400,000 each, beginning March 15, 1950. They would be sold on the basis of competitive bids and the interest rate would be fixed by such bids.

Division 4 of the I. C. C. has **authorized:**

Nashville, Chattanooga & St. Louis.—To assume liability for $4,320,000 of series E equipment trust certificates, proceeds of which will be used to finance in part acquisition of nine Diesel-electric locomotive units of 1,500 hp. each and 1,000 freight cars at an estimated total cost of $5,406,662. The locomotive units, ordered from Electro-Motive Division of General Motors Corporation, will consist of seven "A" units costing $173,756 each and two "B" units costing $167,877 each. The cars, ordered from Pullman-Standard Car Manufacturing Company, will consist of 500 50-ton hopper cars costing $3,802 each and 500 50-ton gondola cars costing $3,906 each. The certificates will be dated February 1 and will mature in 15 annual installments of $288,000 each beginning February 1, 1950. The commission's report approved a selling price of 99.516 with a 2½ per cent interest rate—the bid of the Equitable Securities Corporation and Harris, Hall & Co., which will make the average annual interest cost approximately 2.46 per cent. The certificates were reoffered to the public at prices yielding from 1.45 per cent to 2.575 per cent, according to maturity.

Tennessee Central.—To assume liability for $918,000 of 3 per cent equipment trust certificates, series F, which will be sold to the Reconstruction Finance Corporation at par and accrued dividends. The proceeds will be applied toward acquisition of six Diesel-electric locomotives from the American Locomotive Company at a total cost of $1,020,000. The certificates will be dated March 1, and will mature in 20 semi-annual installments, beginning September 1—19 to be of $46,000 each and the last of $44,000. (See *Railway Age* of January 22, page 55).

Average Prices Stocks and Bonds

	Feb. 8	Last week	Last year
Average price of 20 representative railway stocks	40.88	42.85	46.06
Average price of 20 representative railway bonds	88.60	89.58	86.25

Dividends Declared

Akron, Canton & Youngstown.—Common, 50¢, semi-annually, extra, 50¢, both payable April 1 to holders of record March 15; 5% preferred, $2.50, semi-annually, payable April 1 and October 1 to holders of record March 15 and September 15.

RAILWAY OFFICERS

EXECUTIVE

Rex T. Kearney, president and general manager of the Tidewater Southern at Modesto, Cal., whose election also as president and general manager of the Sacramento Northern (a subsidiary of the Western Pacific), with headquarters at Sacramento, Cal., was reported in the *Railway Age* of December 25, was born on June 1, 1900, at Stockton, Cal. Upon graduation from high school in June, 1918, he entered railway service at Stockton as an accountant for the Southern Pacific. In June, 1919, he became employed by the Tidewater Southern (also a subsidiary of the W.P.) as a clerk at Stockton, becoming an accountant in July, 1922, and trainmaster in July, 1927. He was advanced to superintendent at Modesto, Cal., in August, 1933, and to president and general manager in July, 1946, which position he still holds.

George R. Gregg, whose election as vice-president—traffic of the Chicago Great Western at Chicago, was reported in the *Railway Age* of Decem-

ber 18, 1948, was born at Stansberry, Mo., on February 22, 1892. He entered railway service in 1911 as a clerk in the mechanical department of the Wabash at Moberly, Mo., and two years later he joined the Southern Pacific, with which he served in various clerical capacities at San Francisco Cal., and Oakland. In 1917 he was granted a leave of absence to enter the armed forces and served through World War I, returning to the S. P. in 1919. In 1923 he was appointed traveling freight agent of the Wheeling & Lake Erie, with headquarters at St. Louis, Mo., and one year later he entered the service of the Great Western in the same capacity and with the same headquarters. On April 1, 1926, Mr. Gregg was promoted to general agent, with headquarters at St. Louis, later being transferred to Cincinnati, Ohio,

George R. Gregg

and to Kansas City, Mo. In October, 1933, he became assistant general freight agent at Kansas City, and on January 1, 1935, he was transferred to Chicago. He was advanced to general traffic manager at that point in June, 1946, which position he held at the time of his recent election as vice-president—traffic at Chicago.

FINANCIAL LEGAL & ACCOUNTING

W. V. Toole, assistant paymaster of the Canadian Pacific, has been named paymaster, with headquarters as before at Montreal, Que., succeeding **Arthur Kirkbride,** who has retired on pension after 46 years with the company.

L. B. Plummer, assistant general counsel of the Seaboard Air Line at Norfolk, Va., has retired after more than 51 years of continuous service with that road. Mr. Plummer was born in Warrenton, N. C., and entered the service of the Seaboard Air Line in 1897. After serving in the engineering and treasury departments, he entered the law department in 1903. After being admitted to the bar in 1911, Mr. Plummer served successively as attorney, solicitor, assistant general solicitor, and general attorney. In 1943, he was appointed assistant general counsel.

Donald M. Kerr, whose appointment as auditor of the Grand Trunk Western at Detroit, Mich., was reported in *Railway Age* December 4, 1948, was born at Martinez, Cal. He began his railway career in 1914, in the transportation department of the Nevada, California & Oregon (part of Southern Pacific) at Alturas, Cal., and subsequently served as agent for that company at Reno,

Donald M. Kerr

Nev. He later became superintendent of accounts for the Minneapolis, St. Paul & Sault Ste. Marie at Thief River Falls, Minn., and in 1917 entered the service of the Duluth, Winnipeg & Pacific (part of the Canadian National) at Duluth, Minn. In November, 1944, he was appointed auditor of the Central Vermont at St. Albans, Vt., and was holding this position at the time of his recent appointment as auditor of the Grand Trunk Western.

J. T. Stephenson, whose appointment as general auditor of the Missouri-Kansas-Texas at St. Louis, Mo., was reported in *Railway Age* December 11, 1948, is a native of that city. He received his education in St. Louis and

J. T. Stephenson

in Chicago, and entered railway service with the Katy at Parsons, Kan., in May, 1913, as a clerk in the mechanical department. In 1926 he became a clerk in the shop accounting department at that point, and in 1933 was appointed traveling auditor with headquarters at St. Louis. He returned to Parsons in August, 1942, as assistant auditor, and was transferred back to St. Louis in July, 1945. Mr. Stephenson was promoted to auditor in June, 1947, and was holding that position at the time of his recent appointment as general auditor.

J. U. Bell, auditor of the Lancaster & Chester, with headquarters at Lancaster, S. C., retired on December 31, 1948, after 38 years of service.

OPERATING

A. M. Harris, whose promotion to superintendent of the Fort Wayne, (Ind.) division of the Pennsylvania was reported in the *Railway Age* of January 22, was born on August 7, 1907, at Dumbarton, Va., and was graduated from Virginia Polytechnic Institute with a B.S. degree in Civil Engineering. He entered Pennsylvania service on June 15, 1931, as an assistant in the engineer corps of the Baltimore (Md.) division, and advanced through various positions in the maintenance of way department to become track supervisor of the Buffalo, (N. Y.) division in 1937.

A. M. Harris

He was transferred to the Pittsburgh (Pa.) division in 1939, and became assistant superintendent of freight transportation, Western region, at Chicago, in April, 1941. He was appointed division engineer of the Renovo (Pa.) division in 1942 and of the Columbus (Ohio) division in May, 1944, being advanced to superintendent of the Logansport (Ind.) division in November, 1944. In April, 1946, Mr. Harris was appointed superintendent of freight transportation at Philadelphia, Pa., the post he held at the time of his promotion to superintendent of the Fort Wayne division.

H. M. Cloud, whose promotion to superintendent of terminals for the St. Louis-San Francisco at St. Louis, Mo., was reported in the *Railway Age* of December 18, was born on March 30, 1894, at Peabody, Kan. He attended school in Kansas and Oklahoma and entered service with the Frisco in March, 1912, as a station helper on the Northern division. From July, 1912, to March, 1918, he held the positions of telegrapher, agent, cashier and car distributor on the same division. He was subsequently made dispatcher and extra trainmaster, advancing to chief dispatcher for the Central division in March, 1932. On returning to the Northern division in July, 1932, he served successively as agent-telegrapher, extra dispatcher and dispatcher, until March, 1936, when he was appointed assistant superintendent for the Southern division. Mr. Cloud was transferred to Springfield, Mo., in August, 1942, as assistant superintendent of terminals, which position he held at the time of his recent promotion to superintendent of terminals at St. Louis.

Taylor Wallis has been appointed superintendent of special service of the Missouri-Kansas-Texas, at Dallas, Tex., succeeding **J. K. Ellis,** retired.

George J. Hoy, assistant district superintendent of the Pullman Company at New York, has been promoted to district superintendent at Washington, D. C., succeeding **W. S. Jones,** retired. **Joseph L. Leban,** assistant district superintendent at Pittsburgh, Pa., has been advanced to district superintendent at that point, succeeding **John J. Fiora,** who has been transferred to Philadelphia, Pa., to replace **D. F. Scudder,** retired.

TRAFFIC

Martin P. Nelson, assistant manager of the mail, express, baggage and milk traffic department of the Delaware, Lackawanna & Western at Hoboken, N. J., has been promoted to manager of that department, succeeding **Charles M. Lyon,** whose death on January 27 was reported in the *Railway Age* of February 5.

J. M. Dillard, commercial agent of the Norfolk Southern at Wilson, N. C., has been promoted to division freight agent at Raleigh, N. C.

E. B. Rustad, traveling freight agent of the Great Northern at St. Paul, Minn., has been appointed assistant to the western traffic manager at Seattle, Wash., succeeding **Lyle E. Moore,** who in turn replaces Mr. Rustad.

L. E. Clark, traveling freight and passenger agent of the Wabash, at Omaha, Neb., has been promoted to division freight and passenger agent at Keokuk, Iowa, succeeding **William A. Bridgman,** who has retired because of ill health after more than 43 years with the Wabash.

V. M. Conley, commercial agent of the Chicago, South Shore & South Bend, has been promoted to general agent, with headquarters at Chicago.

Walter C. Olin, assistant general agent in charge of express traffic for the Great Northern at St. Paul, Minn., has been promoted to general agent in charge of express traffic at that point, succeeding the late **C. H. Quirmbach**

Tom J. Wall, who retired on January 31 after 33 years as general agent of the Canadian Pacific at Chicago, is a native of St. Louis, Mo., where he first joined the C. P. in 1908 as traveling passenger agent. Prior to that time, Mr. Wall had worked for the Great Northern, the Toledo, Peoria & West-

Tom J. Wall

ern and the Pennsylvania. He went to Chicago in February, 1911, as city passenger agent for the C. P., and was promoted to general agent at Spokane, Wash., in October, 1911. He was transferred to Minneapolis, Minn., in 1914, and on January 1, 1916, returned to Chicago as general agent.

William D. Stubbs, whose retirement as general western traffic manager of the Illinois Central at San Francisco, Cal., was reported in the *Railway Age* of December 25, 1948, is a native of that city. Upon graduation from high school in 1896, he joined the Southern Pacific as a checker in the freight office and later served in various positions in both the transportation and the traffic departments. He was employed by the Wabash at Los Angeles, Cal., in April, 1906, as traveling freight and passenger agent, and in July, 1909, was appointed general agent at Seattle, Wash., and Portland, Ore., entering the service of the I. C. at the latter point in September, 1912, as general agent. In 1918 he organized and headed a new business department for the Northwestern National at Portland, later returning to the I. C. at that point as general agent. Mr. Stubbs was promoted to western traffic manager at San Francisco in January, 1932, and to general western traffic manager in August, 1945.

E. P. Burke, whose retirement as passenger traffic manager of the Pullman Company at Chicago was reported in the *Railway Age* of January 8, was born on November 14, 1877, in that city. He was employed by the White Star Line and the Grand Trunk (now Grand Trunk Western) before entering the service of the Pullman Company on January 8, 1900, as an office clerk. He was subsequently made rate clerk and later chief clerk, advancing to assistant general passenger agent in January, 1913. Mr. Burke was appointed general passenger agent in May, 1925, and was promoted in 1934 to passenger traffic manager.

E. P. Burke

G. L. Eastman, general freight agent of the Missouri Pacific Lines, at St. Louis, Mo., has been appointed assistant freight traffic manager at that point, succeeding **J. S. Smith,** whose promotion to freight traffic manager in charge of rates and divisions at St. Louis was reported in the *Railway Age* of January 1. Mr. Eastman is replaced by **A. B. Strunk,** assistant general freight agent at St. Louis. **N. E. Kernell,** formerly in the commerce department at St. Louis, has been promoted to assistant general freight agent at that point.

Herbert L. Paylor, Jr., whose promotion to assistant freight traffic manager of the Southern at Birmingham, Ala., was reported in *Railway Age* December 4, 1948, was born at Abbeville, S. C., on June 19, 1902, and studied law at Birmingham Southern College. He began his railway career with the Southern at Birmingham in May, 1919, as a clerk. He was advanced to freight traffic representative at that point in 1925 and was later appointed district freight and passenger agent at Gadsden, Ala., subsequently becoming commercial agent and district freight agent at Mobile, Ala. Mr. Paylor was promoted to division freight agent at

News Department continued on next left-hand page

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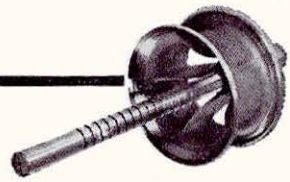
Rising Fuel Costs Can be Offset...



with the FRANKLIN SYSTEM OF DISTRIBUTION

With recently increased cost of locomotive fuels playing such an important part in the great rise in train operation costs, it is especially important at this time to study the fuel-saving possibilities of the Franklin System of Steam Distribution.

Application of this system to your existing or new locomotives *will* offset rising fuel costs.

The Franklin System of Steam Distribution, using poppet valves in place of piston valves, increases the efficiency of transforming steam into horsepower-hours. At normal operating speeds, for either freight or passenger locomotives, the increase in horsepower output will be 19% to 30% for the same steam consumption. For the same power output, fuel savings will be even more pronounced, have reached 45% with maximum evaporation. In normal road service, at less than maximum performance, fuel savings will average from 15% to 25% depending on operating conditions.

We would like to show you how this can be done on your locomotives — either existing or new — for either freight or passenger service.

FRANKLIN RAILWAY SUPPLY COMPANY

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

Augusta, Ga., in February, 1940, and was made assistant general freight agent at Greenville, S. C., in January, 1945. He was serving in the latter position at the time of his promotion to assistant freight traffic manager at Birmingham.

MECHANICAL

Reed Haag, general foreman of the car department of the Delaware, Lackawanna & Western at Scranton, Pa., has been appointed shop superintendent of the Keyser Valley shops. The position of general foreman has been abolished.

S. Carther, mechanical and rule instructor of the Canadian National at Toronto, Ont., has been appointed division master mechanic at Stratford, Ont., succeeding **E. P. East,** retired.

Karl F. Nystrom, who, at his own request, retired on January 31 as chief mechanical officer of the Chicago, Milwaukee, St. Paul & Pacific at Milwaukee, Wis., as was noted in the *Railway Age* of January 8, was born at Aspa Bruk, Sweden, in September, 1881. He is a graduate in mechanical engineering of the Mining School at Filipstad, Sweden (1904), and holds the honorary degree of Doctor of Engineering, which he received from Marquette University in 1941. During his college career he spent summer vacations working in machine shops in Stockholm, Sweden, and in steel mills in other parts of that country. After graduation he went to Germany to study high-tensile steel, but in 1905 came to America and worked as a blueprint boy and later as an engineer for the Midland Steel Company. He was subsequently employed by the American Steel & Wire Co., by the Pressed Steel Car Company as a draftsman and, for a few months, as a member of the engineering staff of the Pullman Company. During the electrification of the Oakland-Alameda interurban line of the Southern Pacific, he designed and supervised the construction of the first electric interurban cars for that service. In 1911 he was appointed assistant mechanical engineer of the American Car & Foundry Co., and in 1912 became mechanical engineer of the Acme Supply Company. In 1913 he was appointed chief draftsman in the car department of the Grand Trunk (now part of the Canadian National); in 1918, chief draftsman, car department, of the Canadian Pacific; and in 1920, engineer of car construction of the Grand Trunk. His association with the Milwaukee Road began in 1922 as engineer of car design. He was appointed engineer of motive power and rolling stock in 1925; master car builder in July, 1927; and superintendent of the car department in September, 1927. In 1937 he became mechanical assistant to the chief operating officer, with general supervision of the car department as well as of engineering, designing, construction and co-ordination of facilities in the mechanical department. On September 1, 1941, his jurisdiction was extended to include all branches of the mechanical department, and early in 1945 his title was changed to chief mechanical officer. In November, 1938, Mr. Nystrom was presented with a bronze plaque, inscribed "For his outstanding contribution to the science and art of design and maintenance of railway rolling stock," by the Car Department Association of St. Louis. In 1930 he was elected president of the Master Car Builders' and Supervisors' Association which emerged, after the depression, in the fall of 1937 as the Car Department Officers' Association. He was a member of the Car Construction Committee of the Mechanical Division of the Association of American Railroads for several years, and is a Fellow of the American Society of Mechanical Engineers. He was chairman of the Railroad Division of the A.S.M.E. during 1945, and has served as a member of the executive committee of that division.

Karl F. Nystrom

PURCHASES & STORES

A. W. White, general tie and timber agent of the Chesapeake & Ohio at Cleveland, Ohio, has retired from active service after approximately 38 years with the road. **M. H. Priddy,** assistant to general tie and timber agent, has been appointed tie and lumber agent, with headquarters as before at Cleveland. The positions of general tie and timber agent and assistant to general tie and timber agent have been abolished.

Edwin M. Pulsipher, whose appointment as assistant general storekeeper of the Great Northern at St. Paul, Minn., was reported in the *Railway Age* of January 8, was born on April 6, 1898, at Blackfoot, Idaho. He first entered G. N. service at Havre, Mont., on July 2, 1918, where he held various positions until January, 1919, when he was made stock clerk there. He subsequently became material clerk in July, 1924, and was transferred to Everett, Wash., in September, 1927, advancing to storekeeper, electrical construction, there in March, 1928. Mr. Pulsipher served as assistant storekeeper at Wenatchee, Wash., from January, 1929, to October, 1933, when he was promoted to storekeeper. In January, 1948, he became traveling storekeeper, with headquarters at Spokane, Wash., the post he held at the time of his appointment as assistant general storekeeper.

M. E. Towner, whose retirement as general purchasing agent of the Western Maryland at Baltimore, Md., was reported in the *Railway Age* of January 1, was born at Branford, Conn., on October 3, 1875. He entered railroad service in September, 1894, in the accounting department of the New York, New Haven & Hartford at New Haven, Conn., subsequently serving as purchasing clerk from 1901 to 1907. In the latter year he became assistant to vice-president, purchases and stores, of the Rock Island-Frisco Lines at Chicago. In 1908 Mr. Towner became purchasing agent of the St. Louis-San Francisco at St. Louis, Mo., leaving railroad service two years later to become president of the Southern Railway Supply Company at St. Louis. Mr. Towner returned to railroad service in 1916 as purchasing agent of the Western Maryland at Baltimore. From 1918 to 1920 he was manager, forest products section, U. S. Railroad Administration at Washington, D. C., and also a member of the staff of the Lumber division of the War Industries Board. He served as general purchasing agent of the W. M. from 1920 until his retirement.

M. E. Towner

ENGINEERING and SIGNALING

L. A. Loggins, whose promotion to assistant chief engineer of the Texas & New Orleans (part of the Southern Pacific Lines) at Houston, Tex., was reported in the *Railway Age* of Decem-

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PRODUCTS

For Railroads

SUPERHEATERS
FEEDWATER HEATERS
EXHAUST STEAM INJECTORS
STEAM DRYERS
PYROMETERS
THERMOSTATIC HEATER VALVES
FLUE WASHERS

●

FORCED RECIRCULATION STEAM GENERATORS FOR TRAIN HEATING

●

For Stationary and Marine Power Plants

Complete steam generating units comprised of all types of boilers, fuel burning and related equipment for capacities from 1,000 to 1,000,000 lb. of steam per hr.

For Pulp Mills

Units for recovery of chemicals and waste heat.

For Process Industries

Mills, pulverizers, air separators and flash drying systems for grinding, drying and separation. Pressure vessels, columns, towers, tanks.

For Synthetic Oil Plants

Steam generators, separately-fired superheaters, gas generators, catalyst reactors.

For Municipalities

Flash drying and incineration systems for sewage sludge.

For Homes

Automatic gas and electric water heaters. Soil pipe.

●

PROPERTIES

Affiliated Companies

The Superheater Company, Ltd., Montreal
The Superheater Company, Ltd., London
The Superheater Company, Pty., Ltd., Sydney
Compagnie des Surchauffeurs, Paris
Combustion Engineering Corporation, Ltd., Montreal
Combustion Engineering de Mexico, S. A., Mexico, D. F.
Combustion Engineering Ltda., Rio de Janeiro
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Announcing the merger of

THE SUPERHEATER COMPANY

AND

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UNDER THE NAME

COMBUSTION ENGINEERING-SUPERHEATER, INC.

The Superheater Company and Combustion Engineering Company, Inc. have been closely associated since their affiliation during 1933. As a major part of the activities of both companies involves the manufacture of related components of steam generating units, this fact prompted the taking of steps in the direction of merger shortly after affiliation. The resulting experience justified the unifying of the two organizations to achieve common objectives.

There will be no change of addresses of the New York or Chicago offices or of the plant at East Chicago, Ind.; and the personnel with whom you have been dealing will continue at your service.

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THE SUPERHEATER COMPANY

Division of COMBUSTION ENGINEERING - SUPERHEATER, INC.

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ber 25, 1948, was born on June 28, 1902, at Ennis, Tex. He first entered railroad service with the T. & N. O. on May 27, 1920, as a coppersmith helper at Ennis, and subsequently served as utility clerk, rodman, chainman, instrumentman, estimator draftsman and engineer accountant at various points. In 1936 he was granted a leave of absence to complete his education at the

L. A. Loggins

University of Texas. He received a B. S. degree in civil engineering in June, 1937, having specialized in railroad structural engineering, and returned to the T. & N.O. as senior instrumentman at Victoria, Tex. He was appointed assistant engineer at that point in August, 1939, and assistant supervisor of bridges and buildings at Houston in June, 1942. The next year be became division engineer at Victoria and was transferred to Houston in that position in February, 1945. Mr. Loggins was advanced to assistant to the chief engineer at Houston in April, 1945, which post he held at the time of his promotion to assistant chief engineer.

Arthur H. Rice, whose retirement as signal engineer and superintendent of telegraph of the Delaware & Hudson at Albany, N. Y., was reported in the *Railway Age* of January 8, was born on November 27, 1873, at Castleton, Vt., where he attended the State Normal School. Mr. Rice entered railroad service on September 1, 1894, with the D. & H. as signal inspector at Albany, being appointed signal supervisor on May 1, 1905, and signal engineer on August 1, 1911. Mr. Rice served as signal engineer and superintendent of telegraph from June 1, 1918, until his retirement on December 31, 1948.

Hugh W. Johnson, whose appointment as assistant chief engineer of the Chicago Great Western, with headquarters at Chicago, was reported in the *Railway Age* of January 15, was born on March 2, 1912, at Atlanta, Ga., and attended the Alabama Polytechnic Institute from 1930 to 1933. He entered railroad service on December 31, 1936, as a rodman for the Southern, and advanced to junior engineer in January, 1941. He entered military service in May, 1943, and served with a railway operating battalion in India. Mr. Johnson returned to the Southern in February, 1946, as assistant engineer at Cincinnati, Ohio, which position he held at the time of his appointment as assistant chief engineer for the C.G.W.

J. N. Fuller, whose appointment as principal assistant engineer of the Texas & New Orleans (part of the Southern Pacific Lines) at Houston, Tex., was reported in the *Railway Age* of December 25, 1948, was born on November 7, 1899, at Minneapolis, Minn. He attended high school at Houston and Rice Institute there, entering railroad service with the T. & N. O. on June 3, 1919, as rodman and draftsman on the Beaumont division at Houston. From April, 1920, to January, 1942, he served successively as instrumentman, engineer-

J. N. Fuller

accountant, office engineer and assistant engineer on the Austin division at Austin, Tex. In February, 1942, he became roadmaster of the Dallas-Austin division, with headquarters at Austin, and in August of the same year he left the T. & N. O. to serve in the United States Army as captain during World War II. Mr. Fuller returned to his last-held position with the T. & N. O. in December, 1945, advancing to senior assistant engineer in the office of the chief engineer at Houston in April, 1947. He held the latter position at the time of his appointment as principal assistant engineer.

Bernel H. Bailey, formerly assistant superintendent of telephone, telegraph and train communications of the Duluth, Missabe & Iron Range, at Two Harbors, Minn., has been advanced to superintendent of telephone, telegraph and train communications at that point, succeeding the late **M. H. Brickley.**

Berry M. Stephens, whose appointment as assistant to chief engineer of the Texas & New Orleans (part of the Southern Pacific Lines) at Houston, Tex., was reported in the *Railway Age* of December 25, 1948, was born June 2, 1904, at Dallas, Tex., and attended Texas Agricultural & Mechanical College. He entered T. & N. O. service on October 28, 1926, as a draftsman in the chief engineer's office at Houston, and in May, 1929, became an estimator-draftsman for the Dallas division, at Ennis, Tex. From December, 1929, to October, 1935, he held successively the positions of office engineer, estimator-draftsman, rodman and draftsman at

Berry M. Stephens

Ennis. He was subsequently transferred to Houston as draftsman in the chief engineer's office and in March, 1939, was advanced to chief draftsman at that point. He was promoted to architectural engineer at Houston in July, 1945, which position he held prior to his appointment as assistant to chief engineer.

OBITUARY

C. H. Quirmbach, general agent in charge of express traffic for the Great Northern at St. Paul, Minn., died recently.

Charles T. Ripley, who was chief mechanical engineer of the Atchison, Topeka & Santa Fe at Chicago until 1937, and who subsequently served as chief engineer of the Wrought Steel Wheel Industry in that city until his retirement in 1946, died at South Leguna, Cal., on February 6.

Marvin Hughitt, Jr., who retired in 1925 as executive vice-president of the Chicago & North Western, died at Palm Beach, Fla., on February 7 at the age of 87. Mr. Hughitt was the son of Marvin Hughitt, Sr., one-time president and board chairman of the North Western.

E. V. Struble, division passenger agent of the Pennsylvania at Indianapolis, Ind., died on January 28.

M. H. Brickley, superintendent of telephone, telegraph and train communications of the Duluth, Missabe & Iron Range, with headquarters at Two Harbors, Minn., died at his office on January 22.

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Freight Operating Statistics of Large Steam Railways — Selected

Region, road and year		Miles of road operated	Train-miles	Locomotive miles: Principal and helper	Locomotive miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thous.): Gross excl.locos. & tenders	Ton-miles (thous.): Net rev. and non-rev.	Road locos. on line: Serviceable: Unstored	Road locos. on line: Serviceable: Stored	Road locos. on line: B.O.	Road locos. on line: Percent B.O.
New Eng. Region	Boston & Albany	1948	362	121,532	128,766	13,887	3,164	64.9	206,423	88,636	50	2	29	35.8
		1947	362	148,424	161,640	22,327	3,481	63.5	225,325	92,966	77	1	15	16.1
	Boston & Maine	1948	1,746	313,890	326,212	17,028	11,825	69.5	753,831	331,017	90	7	13	11.8
		1947	1,745	319,613	332,954	15,524	12,603	71.6	775,819	338,826	99	4	13	11.2
	N. Y., N. H. & Htfd.	1948	1,778	332,199	652,509	50,259	13,292	70.6	816,786	375,094	179	17	29	12.3
		1947	1,820	335,957	644,298	38,423	13,938	73.6	813,515	369,510	192	15	31	15.9
Great Lakes Region	Delaware & Hudson	1948	794	277,749	340,092	36,986	12,593	69.9	880,446	481,223	122	30	28	15.6
		1947	794	284,608	348,854	36,019	12,948	72.7	898,944	500,062	125	25	27	15.3
	Del., Lack. & Western	1948	967	291,064	325,266	33,776	12,654	68.5	846,926	392,323	109	29	15	9.8
		1947	970	331,179	380,128	45,410	14,234	70.6	940,380	433,296	111	7	20	14.5
	Erie	1948	2,229	668,800	704,868	58,071	35,128	64.6	2,342,518	975,414	241	48	74	20.4
		1947	2,229	779,973	835,248	67,344	39,154	67.6	2,536,306	1,073,040	271	8	96	25.6
	Grand Trunk Western	1948	972	262,608	269,016	2,399	8,521	66.4	557,137	243,171	64	1	9	12.2
		1947	972	293,317	302,406	2,721	9,210	68.1	582,717	250,769	65	1	9	12.0
	Lehigh Valley	1948	1,239	301,610	321,730	33,305	13,213	68.5	919,164	448,053	78	19	21	17.8
		1947	1,239	333,895	373,751	51,939	14,194	69.3	950,916	463,744	106	6	52	31.7
	New York Central	1948	10,337	3,164,597	3,376,693	220,393	113,729	62.4	8,037,206	3,744,480	1,021	108	327	22.5
		1947	10,338	3,422,205	3,660,692	244,842	125,633	64.5	8,623,835	4,040,497	1,065	23	334	23.5
	New York, Chic. & St. L.	1948	1,656	639,015	653,197	8,667	25,579	67.4	1,682,523	751,295	145	12	16	9.2
		1947	1,656	653,569	663,058	9,281	26,313	70.9	1,651,875	738,794	152	1	14	8.4
	Pitts. & Lake Erie	1948	222	92,271	93,755	.....	3,788	64.8	319,630	186,782	30	5	16	31.4
		1947	223	105,358	106,270	42	4,248	64.2	360,775	210,622	27	2	15	34.1
	Wabash	1948	2,381	665,064	679,575	15,285	23,432	70.3	1,514,366	671,436	158	5	39	19.3
		1947	2,381	672,871	688,883	15,440	24,619	72.2	1,547,212	690,876	163	9	32	15.7
Central Eastern Region	Baltimore & Ohio	1948	6,076	1,922,665	2,373,487	257,115	66,487	61.7	5,105,683	2,524,381	838	24	264	22.2
		1947	6,100	2,077,532	2,597,063	288,996	73,736	64.4	5,394,973	2,697,182	855	2	280	24.6
	Central of New Jersey*	1948	417	76,308	76,566	5,837	2,904	65.8	218,734	115,279	53	3	6	9.7
		1947	418	77,508	81,554	8,932	3,132	68.0	230,844	120,728	48	3	9	15.0
	Central of Pennsylvania	1948	213	80,726	88,709	13,820	2,921	69.7	214,073	117,801	46	..	10	17.9
		1947	213	77,650	90,062	15,638	3,146	72.1	226,217	113,142	40	2	16	27.6
	Chicago & Eastern Ill.	1948	909	148,997	149,290	3,288	5,052	67.3	337,916	162,164	48	4	14	21.2
		1947	910	178,003	178,681	3,436	5,698	71.8	362,704	187,487	58	..	14	19.4
	Elgin, Joliet & Eastern	1948	238	97,376	98,063	.....	3,650	67.8	279,177	152,952	38	6	..	..
		1947	391	118,734	124,377	4,717	3,609	68.3	274,412	150,052	50	7	4	6.6
	Pennsylvania System	1948	10,023	3,575,214	3,982,531	474,824	142,416	64.7	10,223,875	5,060,478	1,674	65	265	13.2
		1947	10,029	3,894,662	4,393,643	582,427	155,609	67.2	10,862,100	5,418,289	1,906	7	282	12.8
	Reading	1948	1,337	418,104	438,915	37,615	15,665	66.4	1,216,915	673,036	194	19	42	16.5
		1947	1,355	461,277	507,233	59,756	17,433	66.5	1,327,899	733,566	225	16	36	13.0
	Western Maryland	1948	837	194,628	240,347	37,585	7,146	61.6	590,331	323,648	148	8	14	8.2
		1947	837	233,322	281,145	39,876	8,024	60.7	678,160	372,043	156	5	13	7.5
Pocahontas Region	Chesapeake & Ohio	1948	5,026	1,578,538	1,690,100	71,466	64,585	56.4	5,480,761	3,035,388	599	19	104	14.4
		1947	4,987	1,778,176	1,906,958	91,287	76,349	58.1	6,388,861	3,630,855	607	5	92	13.1
	Norfolk & Western	1948	2,107	767,627	813,369	58,655	34,792	58.3	3,062,545	1,679,104	274	32	18	5.6
		1947	2,107	831,158	883,038	64,666	38,428	58.7	3,364,268	1,857,426	264	25	25	8.0
Southern Region	Atlantic Coast Line	1948	5,551	930,139	950,700	15,185	23,448	64.6	1,581,049	714,948	356	15	71	16.1
		1947	5,556	891,382	917,084	13,887	24,352	66.2	1,614,300	740,956	353	33	41	9.6
	Central of Georgia	1948	1,783	281,299	284,709	5,219	7,101	69.9	467,203	221,288	104	2	8	7.0
		1947	1,782	296,527	302,044	5,851	7,515	71.5	485,165	230,960	95	2	11	10.2
	Gulf, Mobile & Ohio	1948	2,847	355,315	356,728	846	16,356	70.2	1,063,694	489,647	110	14	10	7.5
		1947	2,846	381,933	391,534	1,158	17,238	75.8	1,092,454	548,694	132	4	11	7.5
	Illinois Central	1948	6,550	1,469,230	1,472,602	51,573	52,689	63.9	3,643,392	1,701,913	575	10	74	11.2
		1947	6,581	1,485,920	1,491,942	53,010	54,555	66.4	3,712,835	1,757,738	570	12	72	11.0
	Louisville & Nashville	1948	4,750	1,344,343	1,441,074	37,985	34,643	62.7	2,506,644	1,278,064	396	29	64	13.1
		1947	4,756	1,548,567	1,687,066	49,689	41,281	63.9	3,014,119	1,583,096	398	.	80	16.7
	Nash., Chatt. & St. Louis	1948	1,051	265,274	269,058	7,281	6,142	74.1	391,402	184,336	81	..	2	2.4
		1947	1,052	302,367	332,403	9,229	7,404	74.3	470,050	224,001	80	..	18	18.4
	Seaboard Air Line	1948	4,142	766,382	805,430	9,873	23,344	66.1	1,605,539	730,644	265	13	50	15.2
		1947	4,145	822,766	899,356	11,747	24,235	67.4	1,623,697	742,600	287	.	59	17.1
	Southern	1948	6,388	1,585,581	1,610,696	28,606	41,747	67.2	2,705,745	1,202,811	542	20	119	17.5
		1947	6,451	1,789,623	1,818,325	31,666	47,967	69.9	3,065,178	1,403,396	544	22	102	15.3
Northwestern Region	Chicago & North Western	1948	8,073	1,015,590	1,065,274	25,495	32,677	64.8	2,262,129	1,012,987	371	8	93	19.7
		1947	8,055	1,025,077	1,068,085	27,654	33,954	70.5	2,227,867	1,018,620	364	6	106	22.3
	Chicago Great Western	1948	1,445	197,977	202,345	11,625	9,032	69.3	578,420	253,826	53	..	18	25.4
		1947	1,445	259,111	260,526	10,638	9,444	67.9	618,071	269,333	63	3	20	23.3
	Chic., Milw., St. P. & Pac.	1948	10,663	1,435,024	1,502,721	60,017	48,917	67.6	3,284,972	1,526,393	471	37	78	13.3
		1947	10,677	1,519,039	1,595,570	68,457	51,297	68.4	3,401,050	1,576,196	489	18	101	16.6
	Chic., St. P., Minn. & Omaha	1948	1,606	215,258	231,412	14,598	5,705	70.4	382,569	175,295	77	..	37	32.5
		1947	1,606	217,414	232,541	13,272	5,840	73.9	382,431	178,889	86	..	29	25.2
	Duluth, Missabe & Iron Range	1948	578	126,641	127,003	692	6,625	51.1	582,604	325,935	66	..	2	2.9
		1947	548	117,767	118,077	1,146	5,308	50.5	460,959	263,404	61	..	1	1.6
	Great Northern	1948	8,240	1,077,999	1,074,616	49,642	42,406	67.2	2,933,257	1,379,891	358	66	59	12.2
		1947	8,237	1,219,199	1,228,766	48,457	44,552	63.1	3,179,877	1,454,819	390	25	57	12.1
	Minneap., St. P. & S. St. M.	1948	4,180	415,364	425,290	8,061	13,235	68.7	843,084	389,586	119	..	12	9.2
		1947	4,181	481,179	494,644	11,222	13,981	66.7	931,736	436,978	123	..	19	13.4
	Northern Pacific	1948	6,593	816,309	866,123	50,802	34,017	71.9	2,280,796	1,117,601	342	22	58	13.7
		1947	6,623	932,198	988,546	56,569	36,053	68.3	2,480,393	1,171,820	352	22	50	11.8
Central Western Region	Atch., Top. & S. Fe (incl. G. C. & S. F. & P. & S. F.)	1948	13,080	2,947,050	3,136,418	138,069	109,143	65.6	7,307,332	2,932,666	731	66	147	15.6
		1947	13,107	3,152,459	3,350,203	158,239	118,047	68.6	7,678,690	3,139,537	785	49	123	12.9
	Chic., Burl. & Quincy	1948	8,670	1,294,645	1,320,556	41,658	51,735	64.5	3,561,833	1,615,359	403	50	81	15.2
		1947	8,671	1,463,688	1,515,987	53,087	57,024	64.5	3,947,245	1,798,178	465	8	63	11.8
	Chic., Rock I. & Pac.	1948	7,612	1,126,586	1,163,530	10,533	36,584	62.1	2,529,412	1,107,628	311	26	50	12.9
		1947	7,619	1,195,120	1,230,872	13,806	38,917	66.9	2,547,739	1,136,010	284	26	86	21.7
	Denver & R. G. Wn.	1948	2,443	433,498	490,403	71,968	14,747	75.4	972,871	490,186	151	18	49	22.5
		1947	2,467	456,980	515,621	67,596	14,492	74.9	945,066	463,932	163	18	48	21.0
	Southern Pacific	1948	8,090	2,116,819	2,346,571	412,251	89,680	68.6	5,936,438	2,560,571	725	9	196	21.1
		1947	8,109	2,247,078	2,527,811	466,944	91,851	68.1	6,050,173	2,568,160	720	10	211	22.4
	Union Pacific	1948	9,751	2,530,818	2,623,343	191,840	101,739	66.3	6,817,601	2,871,150	594	57	142	17.9
		1947	9,764	2,964,151	3,109,119	224,775	107,998	65.9	7,314,217	3,022,901	722	13	101	12.1
	Western Pacific	1948	1,192	235,891	256,275	24,035	10,909	79.1	662,589	313,672	76	29	16	13.2
		1947	1,192	261,760	288,367	25,942	11,663	77.8	697,912	316,037	76	32	20	15.6
Southwestern Region	International-Gt. Northern*	1948	1,110	205,033	206,611	1,702	5,949	61.8	464,909	216,306	59	..	12	16.9
		1947	1,110	267,077	269,082	548	6,873	67.6	473,848	217,167	63	..	16	20.3
	Kansas City Southern	1948	885	187,607	187,868	1,594	8,990	66.3	624,467	294,651	44	5	7	12.5
		1947	885	207,717	214,209	2,266	9,333	67.7	630,285	297,146	49	2	7	12.1
	Mo.-Kans.-Texas Lines	1948	3,241	657,137	672,208	8,763	19,725	62.5	1,356,529	608,755	127	..	26	17.0
		1947	3,241	518,188	530,797	8,428	16,624	65.6	1,085,086	479,866	119	1	33	21.6
	Missouri Pacific*	1948	6,983	1,465,744	1,510,641	30,956	49,602	65.6	3,416,833	1,542,408	423	..	56	11.7
		1947	6,985	1,556,930	1,583,710	40,277	53,420	66.7	3,581,937	1,626,588	416	..	66	13.7
	Texas & Pacific	1948	1,852	455,614	455,614	13,459	15,764	65.6	1,058,362	458,789	110	1	11	9.0
		1947	1,852	512,404	512,404	14,495	16,866	63.2	1,153,074	489,937	115	2	9	7.1
	St. Louis-San Francisco	1948	4,615	832,930	848,310	10,049	22,978	65.5	1,583,472	710,128	291	12	45	12.9
		1947	4,615	961,698	1,004,134	11,619	24,282	67.2	1,645,810	744,424	293	12	29	8.7
	St. Louis Southw. Lines	1948	1,562	389,781	392,094	5,188	15,327	74.7	935,349	418,125	85	7	13	12.4
		1947	1,568	388,307	391,037	5,429	15,690	75.9	935,178	418,038	86	8	12	11.3
	Texas & New Orleans	1948	4,314	953,219	954,839	27,877	27,105	71.2	1,814,271	843,288	217	..	32	12.9
		1947	4,314	987,974	988,575	16,615	27,595	71.0	1,812,807	820,195	216	..	27	11.1

*Report of trustee or trustees.
Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to Revision.

Items for the Month of November 1948 Compared November 1947

	Region, road and year		Freight cars on line: Home	Foreign	Total	Per Cent B.O.	G.t.m.per train-hr. excl.locos and tenders	G.t.m.per train-mi. excl.locos and tenders	Net ton-mi. per train-mile	Net ton-mi. per l'd. car-mile	Net ton-mi. per car-day	Car miles per car-day	Net daily ton-miles per road-mile	Coal lb. per 1000 g.t.m. inc. loco.	Mi. per loco. per day
New Eng. Region	Boston & Albany	1948	282	5,373	5,655	0.9	27,501	1,714	736	28.0	532	29.3	8,162	160	67.2
		1947	209	5,035	5,244	0.3	23,976	1,524	629	26.7	585	34.5	8,560	142	72.6
	Boston & Maine	1948	1,550	11,079	12,629	2.4	38,386	2,407	1,057	28.0	868	44.6	6,320	104	112.7
		1947	1,360	11,020	12,380	2.6	37,105	2,436	1,064	26.9	903	46.9	6,472	108	103.6
	N. Y., N. H. & Htfd	1948	1,471	20,008	21,479	1.4	35,258	2,464	1,132	28.2	589	29.6	7,032	71	102.6
		1947	969	19,168	20,137	1.2	33,994	2,430	1,104	26.5	616	31.6	6,768	81	98.0
Great Lakes Region	Delaware & Hudson	1948	2,973	6,842	9,815	3.8	58,119	3,219	1,742	38.2	1,622	60.7	20,202	102	72.8
		1947	1,581	7,548	9,039	4.9	57,477	3,172	1,765	38.6	1,803	64.2	20,993	111	75.6
	Del., Lack. & Western	1948	4,528	10,331	14,859	4.5	45,314	2,964	1,373	31.0	859	40.5	13,524	108	87.2
		1947	3,570	12,082	15,662	3.9	44,255	2,884	1,329	30.4	894	41.6	14,890	114	111.8
	Erie	1948	7,656	20,988	28,644	5.0	58,583	3,525	1,468	27.8	1,053	58.7	14,587	106	77.4
		1947	5,083	24,769	29,852	4.3	53,426	3,273	1,385	27.4	1,121	60.5	16,047	102	87.4
	Grand Trunk Western	1948	4,423	8,416	12,839	8.2	42,962	2,132	931	28.5	631	33.3	8,339	59	131.7
		1947	3,875	10,837	14,712	6.0	38,483	1,998	860	27.2	567	30.6	8,600	98	147.6
	Lehigh Valley	1948	7,446	11,643	19,089	11.6	57,631	3,113	1,517	33.9	778	33.5	12,054	69	102.3
		1947	5,411	13,418	18,829	7.6	52,091	2,911	1,420	32.7	798	35.3	12,476	112	89.2
	New York Central	1948	55,084	101,690	156,774	3.8	40,376	2,580	1,202	32.9	787	38.3	12,075	111	92.4
		1947	42,647	111,495	154,142	2.9	39,239	2,552	1,196	32.2	881	42.4	13,028	115	103.0
	New York, Chic. & St. L	1948	2,380	14,570	16,950	1.6	51,074	2,650	1,183	29.4	1,442	72.9	15,123	88	134.5
		1947	1,971	14,477	16,448	1.4	48,340	2,538	1,135	28.1	1,523	76.5	14,871	94	142.0
	Pitts. & Lake Erie	1948	5,080	10,745	15,825	6.2	51,896	3,473	2,029	49.3	398	12.5	28,045	97	69.5
		1947	3,015	9,531	12,546	6.4	49,997	3,436	2,006	49.6	560	17.6	31,483	104	80.7
	Wabash	1948	6,155	13,272	19,427	3.5	46,213	2,301	1,020	28.7	1,103	54.8	9,400	114	120.9
		1947	4,913	15,655	20,568	3.3	45,220	2,321	1,036	28.1	1,091	53.8	9,672	115	120.3
Central Eastern Region	Baltimore & Ohio	1948	46,963	40,321	87,284	7.3	34,074	2,710	1,340	38.0	923	39.4	13,849	147	82.5
		1947	38,849	52,614	91,463	5.0	32,332	2,655	1,328	36.6	989	42.0	14,739	156	87.0
	Central of New Jersey*	1948	799	9,179	9,978	5.0	40,664	3,016	1,589	39.7	389	14.9	9,215	95	72.0
		1947	694	9,493	10,187	3.5	38,981	3,080	1,611	38.5	394	15.0	9,627	124	76.5
	Central of Pennsylvania	1948	979	3,143	4,122	6.4	39,402	2,871	1,580	40.3	911	32.4	18,435	141	73.6
		1947	740	4,463	5,203	7.1	39,233	3,070	1,535	36.0	727	28.0	17,706	130	67.8
	Chicago & Eastern Ill	1948	2,213	3,451	5,664	5.4	37,446	2,288	1,098	32.1	917	42.5	5,947	111	81.3
		1947	1,785	4,382	6,167	3.0	35,713	2,055	1,062	32.9	1,044	44.2	6,868	124	88.0
	Elgin, Joliet & Eastern	1948	6,147	11,383	17,530	2.2	20,073	3,039	1,665	41.9	301	10.6	21,422	230	106.8
		1947	5,405	12,234	17,639	1.7	15,183	2,453	1,341	41.6	295	10.4	12,792	146	110.9
	Pennsylvania System	1948	125,654	118,710	244,364	8.8	39,841	2,952	1,461	35.5	677	29.5	16,830	113	80.3
		1947	104,701	142,553	247,254	9.6	36,868	2,883	1,438	34.8	725	31.0	18,009	121	82.0
	Reading	1948	12,433	19,841	32,274	6.0	37,179	2,916	1,613	43.0	680	23.9	16,780	98	75.9
		1947	9,469	26,705	36,174	3.3	34,966	2,888	1,595	42.1	691	24.7	18,046	109	78.7
	Western Maryland	1948	5,086	3,328	8,414	1.3	32,836	3,082	1,690	45.3	1,369	48.8	12,889	147	58.2
		1947	3,226	5,210	8,436	1.4	31,098	2,951	1,619	46.4	1,614	57.3	14,817	157	66.1
Pocahontas Region	Chesapeake & Ohio	1948	50,967	23,138	74,105	2.7	54,189	3,511	1,944	47.0	1,339	50.5	20,131	86	89.0
		1947	42,845	29,825	72,670	1.6	53,494	3,656	2,078	47.6	1,600	57.9	24,269	85	102.0
	Norfolk & Western	1948	33,979	7,733	41,712	2.8	64,847	4,052	2,222	48.3	1,443	51.3	26,564	91	96.8
		1947	24,878	8,291	33,169	2.2	65,191	4,121	2,275	48.3	1,857	65.4	29,385	96	107.3
Southern Region	Atlantic Coast Line	1948	9,404	18,080	27,484	3.0	28,041	1,705	771	30.5	858	43.6	4,293	122	80.1
		1947	8,091	20,264	28,355	4.6	28,488	1,816	833	30.4	873	43.3	4,445	120	77.7
	Central of Georgia	1948	2,318	6,309	8,627	5.4	30,065	1,665	780	31.2	852	39.1	4,137	130	92.4
		1947	1,651	6,183	7,834	4.3	30,047	1,642	782	30.7	963	43.8	4,320	142	101.5
	Gulf, Mobile & Ohio	1948	2,936	12,277	15,213	1.7	53,986	3,004	1,383	29.9	1,079	51.4	5,733	78	92.9
		1947	2,429	12,923	15,352	1.4	51,514	2,871	1,442	31.8	1,130	46.8	6,426	55	95.2
	Illinois Central	1948	18,408	38,509	56,917	1.4	43,864	2,505	1,170	32.3	1,047	50.7	8,661	122	81.8
		1947	13,924	35,054	48,978	1.3	42,672	2,532	1,199	32.2	1,157	54.1	8,903	130	83.0
	Louisville & Nashville	1948	32,317	15,382	47,699	2.9	29,707	1,870	953	36.9	951	41.1	8,969	129	106.3
		1947	25,912	18,342	44,254	3.8	28,846	1,946	1,022	38.3	1,212	49.4	11,095	132	126.6
	Nash., Chatt. & St. Louis	1948	879	4,833	5,712	2.2	29,449	1,481	697	30.0	1,019	45.8	5,846	144	115.8
		1947	1,426	6,254	7,680	5.2	29,132	1,560	743	30.3	1,013	45.0	7,098	137	121.4
	Seaboard Air Line	1948	7,513	15,592	23,105	1.2	37,446	2,146	977	31.3	1,061	51.3	5,880	111	92.1
		1947	5,704	16,936	22,640	1.7	34,646	2,014	921	30.6	1,084	52 5	5,972	119	98.0
	Southern	1948	13,621	31,699	45,320	4.5	29,751	1,725	767	28.8	893	46.1	6,276	128	81.3
		1947	12,042	33,857	45,899	3.5	29,281	1,733	793	29.3	1,049	51.3	7,252	129	96.0
Northwestern Region	Chicago & North Western	1948	18,578	34,592	53,170	3.0	34,253	2,337	1,046	31.0	614	30.6	4,183	125	83.5
		1947	16,345	36,634	52,979	3.0	31,965	2,291	1,047	30.0	621	29.3	4,215	136	83.0
	Chicago Great Western	1948	1,076	4,860	5,936	4.7	47,681	2,923	1,283	28.1	1,315	67.5	5,855	116	104.9
		1947	854	5,215	6,069	3.2	38,557	2,386	1,040	28.5	1,443	74.5	6,213	131	111.6
	Chic., Milw., St. P. & Pac	1948	20,681	36,267	56,948	1.7	36,454	2,307	1,072	31.2	868	41.2	4,772	121	96.1
		1947	16,831	47,790	64,621	1.7	34,103	2,259	1,047	30.7	826	39.3	4,921	125	98.6
	Chic., St. P., Minn. & Omaha	1948	1,079	7,032	8,111	4.5	24,078	1,856	850	30.7	712	32.9	3,638	121	76.9
		1947	801	8,074	8,875	4.9	22,481	1,810	847	30.6	653	28.9	3,713	133	76.3
	Duluth, Missabe & Iron Range	1948	14,666	673	15,339	3.0	77,909	4,773	2,670	49.2	717	28.5	18,797	71	83.3
		1947	14,894	409	15,303	2.6	65,692	4,063	2,322	49.6	573	22.9	16,022	72	86.4
	Great Northern	1948	18,597	20,839	39,436	2.6	44,887	2,742	1,290	32.5	1,142	52.3	5,582	102	83.5
		1947	16,940	26,254	43,194	2.3	40,422	2,630	1,203	32.7	1,076	52.2	5,887	111	97.1
	Minneap., St. P. & S. St. M	1948	4,783	8,628	13,411	5.2	36,688	2,049	947	29.4	875	43.3	3,107	95	115.9
		1947	5,436	10,462	15,898	2.7	32,542	1,951	915	31.3	911	43.7	3,484	104	128.8
	Northern Pacific	1948	16,363	17,307	33,670	5.1	45,896	2,809	1,377	32.9	1,088	46.0	5,650	140	79.9
		1947	13,278	18,815	32,093	4.3	43,777	2,679	1,265	32.5	1,205	54.3	5,898	145	90.0
Central Western Region	Atch., Top. & S. Fe (incl. G. C. & S. F. & P. & S. F.)	1948	41,232	40,649	81,881	5.1	49,345	2,494	1,001	26.9	1,237	70.2	7,474	106	121.7
		1947	34,920	40,857	75,777	5.3	47,946	2,453	1,003	26.6	1,359	74.5	7,984	109	128.6
	Chic., Burl. & Quincy	1948	14,394	28,555	42,949	3.3	49,054	2,763	1,253	31.2	1,261	62.6	6,211	104	91.2
		1947	12,596	33,585	46,181	2.3	45,437	2,708	1,234	31.5	1,309	64.4	6,913	108	105.9
	Chic., Rock I. & Pac	1948	9,724	27,723	37,447	3.5	40,024	2,252	986	30.3	1,007	53.6	4,850	103	106.9
		1947	8,629	25,549	34,178	3.5	38,118	2,139	954	29.2	1,098	56.2	4,970	108	108.5
	Denver & R. G. Wn	1948	7,224	8,200	15,424	3.9	36,730	2,262	1,140	33.2	1,012	40.4	6,688	182	93.3
		1947	6,423	7,573	13,996	4.3	34,222	2,085	1,024	32.0	1,096	45.7	6,269	184	90.2
	Southern Pacific	1948	24,846	38,252	63,098	3.2	45,346	2,832	1,221	28.6	1,279	65.3	10,550	96	105.5
		1947	21,301	43,660	64,961	2.7	42,760	2,716	1,153	28.0	1,319	69.3	10,557	104	111.0
	Union Pacific	1948	23,197	37,588	60,785	2.4	57,674	2,739	1,154	28.2	1,575	84.2	9,815	121	123.5
		1947	22,330	43,299	65,629	2.5	48,854	2,506	1,036	28.0	1,568	85.0	10,320	137	137.1
	Western Pacific	1948	2,127	2,509	4,636	8.4	58,465	2,819	1,335	28.8	2,205	97.0	8,772	59	78.4
		1947	2,260	3,767	6,027	4.5	53,864	2,676	1,212	27.1	1,794	85.1	8,838	67	83.4
Southwestern Region	International-Gt. Northern*	1948	355	7,192	7,547	1.0	41,782	2,292	1,066	36.4	999	44.4	6,496	71	96.6
		1947	331	6,814	7,145	.8	33,573	1,798	824	31.6	1,031	48.3	6,521	110	122.8
	Kansas City Southern	1948	1,195	5,649	6,844	3.8	65,644	3,349	1,580	32.8	1,409	64.9	11,098	106	121.3
		1947	1,087	6,010	7,097	2.6	59,930	3,060	1,443	31.8	1,433	66.5	11,192	110	133.7
	Mo.-Kans.-Texas Lines	1948	2,161	9,200	11,361	.5	37,997	2,090	938	30.9	1,714	88.8	6,261	91	159.3
		1947	1,421	5,579	7,000	1.1	39,445	2,105	931	28.9	1,932	102.0	4,935	90	125.0
	Missouri Pacific*	1948	11,820	28,677	40,497	2.0	44,379	2,343	1,058	31.1	1,291	63.3	7,363	99	113.0
		1947	14,195	22,629	36,824	1.7	41,840	2,317	1,052	30.4	1,463	72.0	7,762	111	117.9
	Texas & Pacific	1948	1,898	8,449	10,347	3.5	42,873	2,337	1,013	29.1	1,531	80.2	8,258	90	134.6
		1947	1,464	9,947	11,411	2.6	38,692	2,273	966	29.0	1,524	83.0	8,818	97	146.8
	St. Louis-San Francisco	1948	5,347	14,751	20,098	2.2	37,026	1,914	858	30.9	1,157	57.2	5,129	127	88.6
		1947	4,412	16,011	20,423	2.4	33,658	1,717	777	30.7	1,184	57.4	5,377	130	107.5
	St. Louis Southw. Lines	1948	1,314	6,128	7,442	1.4	47,883	2,404	1,074	27.3	1,828	89.7	8,923	80	135.2
		1947	1,083	5,802	6,885	1.9	46,787	2,411	1,078	26.6	2,069	102.3	8,887	81	134.1
	Texas & New Orleans	1948	3,949	16,460	20,409	2.7	37,165	1,923	894	31.1	1,306	59.0	6,516	87	137.3
		1947	3,076	17,224	20,300	2.7	35,835	1,861	842	29.7	1,380	65.4	6,337	90	143.8

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Meetings and Conventions

(Continued from page 64)

Electrical Section.—J. A. Andreucetti, 59 E. Van Buren St., Chicago 5, Ill.

Purchases and Stores Division.—W. J. Farrell (Executive Vice-Chairman), Transportation Bldg., Washington 6, D. C. Annual meeting, June 27-29, 1949, Palmer House, Chicago, Ill.

Freight Claim Division.—C. C. Beauprie, 59 E. Van Buren St., Chicago 5, Ill. Annual meeting, June 14-16, 1949, Boston, Mass.

Motor Transport Division.—Transportation Bldg., Washington 6, D. C.

Car Service Division.—Arthur H. Gass, Chairman, Transportation Bldg., Washington 6, D. C.

Finance Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington 6, D. C.

Accounting Division.—E. R. Ford, Transportation Bldg., Washington 6, D. C. Annual meeting, May 17-19, 1949, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J.

Treasury Division.—E. R. Ford, Transportation Bldg., Washington 6, D. C. Annual meeting, October 26-28, 1949, General Oglethorpe Hotel, Savannah, Ga.

Traffic Department.—Walter J. Kelly, Traffic Officer, Transportation Bldg., Washington 6, D. C.

Association of Railroad Advertising Managers.—Samuel E. McKay, Baltimore & Ohio R. R., Grand Central Station, Chicago 7, Ill.

Association of Railway Claim Agents.—F. L. Johnson, Gulf, Mobile & Ohio R.R., Mobile 5, Ala. Annual meeting, May 25-27, 1949, Battery Park Hotel, Asheville, N. C.

Bridge and Building Supply Men's Association.—E. C. Gunther, Duff-Norton Mfg. Co., 122 S. Michigan Ave., Chicago 3, Ill.

Canadian Railway Club.—C. R. Crook, 4415 Marcil Ave., N. D. G., Montreal 28, Que. Regular meetings second Monday of each month, except June, July and August, Mount Royal Hotel, Montreal, Que.

Car Department Association of St. Louis.—J. J. Sheehan, 1101 Missouri Pacific Bldg., St. Louis 3, Mo. Regular meetings, third Tuesday of each month, except June, July and August, Hotel DeSoto, St. Louis, Mo.

Car Department Officers' Association.—F. H. Stremmel, 6536 Oxford Ave., Chicago 31, Ill. Annual meeting September 19-22, 1949, Hotel Sherman, Chicago, Ill.

Car Foremen's Association of Chicago.—J. A. Dinges, Union Tank Car Company, 228 N. LaSalle St., Chicago 1, Ill. Regular meetings, second Monday of each month except June, July and August, LaSalle Hotel, Chicago, Ill.

Central Railway Club of Buffalo.—R. E. Mann, Hotel Statler, McKinley Square, Buffalo 5, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

Chicago Luncheon Club of Military Railway Service Veterans.—Col. R. O. Jensen, Schiller Park, Ill. Luncheon second Wednesday of each month, Chicago Traffic Club, Palmer House, Chicago, Ill.

Coordinated Railroad Mechanical Associations.—C. F. Weil, American Brake Shoe Company, 6th floor, 109 N. Wabash Ave., Chicago 2, Ill. Annual meeting, September 19-22, 1949, Hotel Sherman, Chicago, Ill.

Eastern Association of Car Service Officers.—H. J. Hawthorne, Union Railroad, East Pittsburgh, Pa.

Eastern Car Foreman's Association.—W. P. Dizard, 30 Church St., New York 7, N. Y. Regular meetings, second Friday of January, February (Annual Dinner), March, April, May, October and November, 29 W. 39th St., New York, N. Y.

Locomotive Maintenance Officers' Association.—C. M. Lipscomb, 1721 Parker St., North Little Rock, Ark. Annual meeting, September 19-22, 1949, Hotel Sherman, Chicago, Ill.

Maintenance of Way Club of Chicago.—E. C. Patterson, 400 W. Madison St., Chicago 6, Ill. Regular meetings, fourth Monday of each month, October through April, inclusive, except December, when the third Monday, at Eitel's Restaurant, Field Bldg.

Master Boiler Makers' Association.—A. F. Stiglmeier, 29 Parkwood St., Albany 3, N. Y. Annual meeting, September 19-22, 1949, Hotel Sherman, Chicago, Ill.

Metropolitan Maintenance of Way Club.—John Vreeland, Simmons-Boardman Publishing Corp., 30 Church St., New York 7, N. Y. Meets in October, December, February and April. Next meeting, February 24, 1949, Skyline Room, Hotel Sheraton.

Military Railway Service Veterans.—

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NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Ben Smart, 7413 New Post Office Bldg., Washington 25, D. C. Annual meeting, August, 1949, Hotel Cleveland, Cleveland, O.

NATIONAL ASSOCIATION OF SHIPPERS' ADVISORY BOARDS—Frank Cross, General Mills, Inc., Oklahoma City, Okla.

NATIONAL INDUSTRIAL TRAFFIC LEAGUE.—Edward F. Lacey, Suite 450, Munsey Bldg., Washington 4, D. C. Annual meeting, November 17-18, 1949, Palmer House, Chicago, Ill.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—R. B. Fisher, 59 E. Van Buren St., Chicago 5, Ill. Exhibit in connection with American Railway Engineering Association Convention, March 14-17, 1949, Coliseum, Chicago, Ill.

NEW ENGLAND RAILROAD CLUB.—T. F. Dwyer, Jr., 683 Atlantic Ave., Boston, 11, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Hotel Vendome, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York 7, N. Y. Regular meetings, third Thursday of each month, except June, July, August and September and December, 29 W. 39th St., New York, N. Y.

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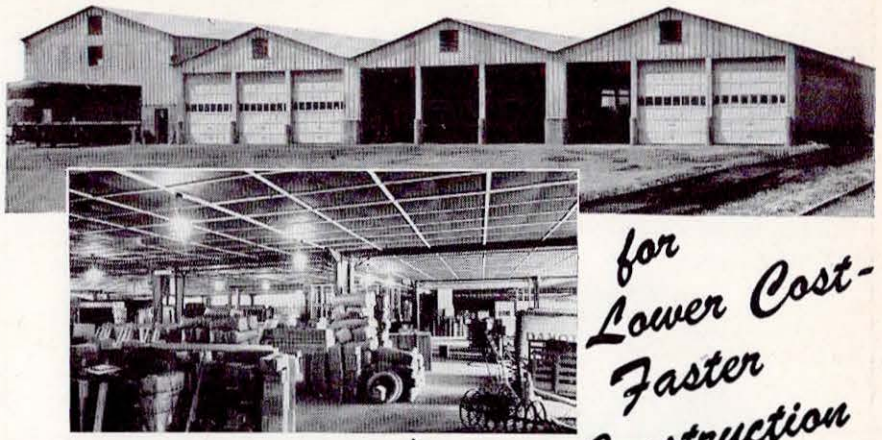

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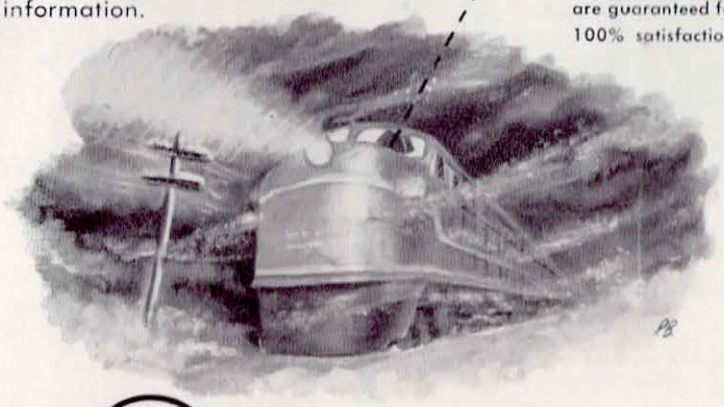

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Current Publications

The Railroad Modification Law, by Chauncey H. Hand, Jr., and G. Clark Cummings. Columbia Law Review, July, 1948, pp. 689-712. Published by Columbia University, New York, N. Y. Single copies, $1.

Mr. Hand and Mr. Cummings do a scholarly job of explaining the Railroad modification Law—the so-called Mahaffie Act—(Section 20b of the Interstate Commerce Act, which establishes a voluntary extra-judicial procedure whereby a railroad may make alterations and modifications in its securities merely by obtaining the approval of the Interstate Commerce Commission and the consent of a specified percentage of the security holders to be affected). They review the historical development of the law, explain its purposes, compare voluntary modification with judicial reorganization, define its limits, discuss its possibilities for modernizing securities and instruments, and its constitutionality. The study is extremely well-documented.

TRADE PUBLICATIONS

International Diesel Engines and Power Units. 24 pages, illustrated. Published by Industrial Power Division, International Harvester Company, 180 No. Michigan ave., Chicago 1.

Contains design features, work capacities and specifications of International Diesel engines.

The Caterpillar Diesel D4 Tractor. 32 pages, illustrated. Published by the Caterpillar Tractor Company, Peoria 8, Illinois.

This booklet contains engineer's drawings, cut-away sectional drawings and retouched photographs of the working parts of the Caterpillar D4 tractor, with explanatory copy of the salient points concerning manufacture. It also contains specifications, and pictures of the tractor in operation on a variety of jobs.

PAMPHLET

Land Transport in France During 1947, by William M. Gibson. 3 pages. Issued by the Office of International Trade, United States Department of Commerce. Available from the Government Printing Office, Washington 25, D. C. Price, five cents.

Reviews railroad, underground and surface transportation in Paris and its suburbs, and trucking in 1947. Under railroads the author briefly discusses car loadings, rolling stock, freight rates and passenger fares, freight and passenger traffic, financing and the Monnet Plan for the rehabilitation of French industry.

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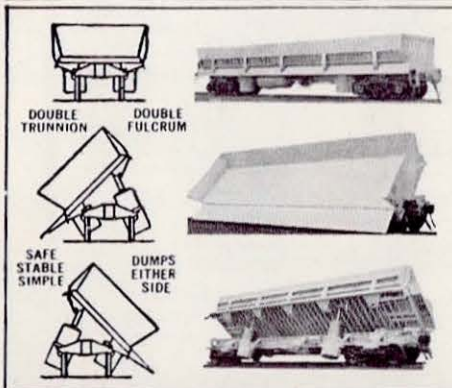

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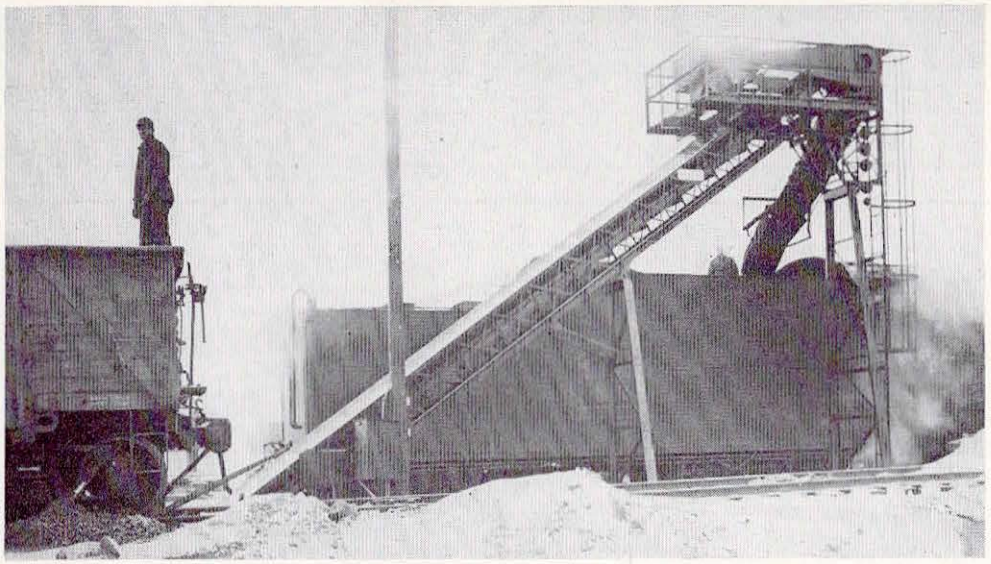

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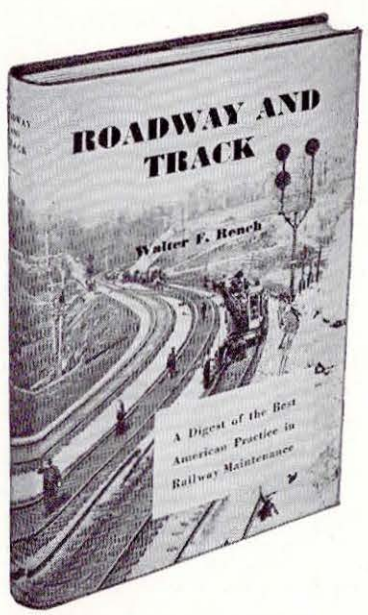

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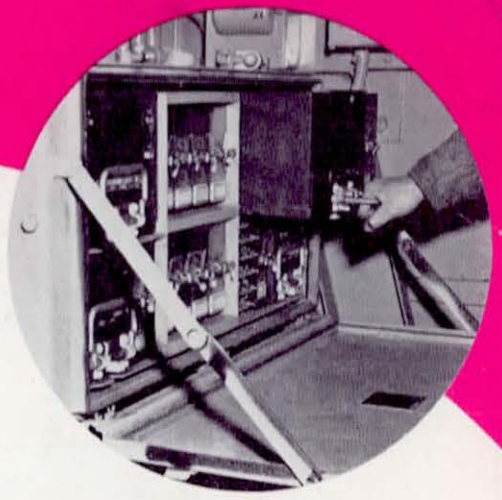

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